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Management of Investigation-Derived Wastes During Site Inspections

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EXECUTIVE SUMMARY

This guidance presents a general regulatory background and options for management of investigation-derived wastes (IDW) generated during Superfund site inspections (SIs). These wastes include soil cuttings, drilling muds, purged ground water, decontamination fluids (water and other fluids), disposable sampling equipment (DSE), and disposable personal protective equipment (PPE). The National Contingency Plan (NCP) requires that management of IDW generated during SIs comply with all applicable or relevant and appropriate requirements (ARARs) to the extent practicable. In addition, other legal and practical considerations may affect the handling of IDW. Therefore, site inspection managers and other involved parties should be familiar with this guidance, as well as the requirements of the NCP, ARARs, and EPA's interpretation of these requirements.

IDW from SIs may contain hazardous substances as defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Some CERCLA hazardous substances are hazardous wastes under Subtitle C of the Resource Conservation and Recovery Act (RCRA), while other substances are regulated by other federal laws such as the Safe Drinking Water Act (SDWA), Clean Air Act (CAA), Toxic Substances Control Act (TSCA), and the Clean Water Act (CWA). EPA estimates that RCRA hazardous IDW have been generated at fewer than 15 percent of CERCLA sites. However, RCRA regulations, and in particular the RCRA Land Disposal Restrictions (LDRs), are very important as potential ARARs since they regulate treatment, storage, and disposal of many of the most toxic and hazardous materials.

EPA's strategy for managing RCRA hazardous IDW presented in this guidance is based on:

- The NCP directive that SIs comply with ARARs to the extent practicable.
- The Area of Contamination (AOC) unit concept.

The most important elements of the IDW management approach are as follows:

- Leaving a site in no worse condition than existed prior to the investigation.
- Removing those wastes that pose an immediate threat to human health or the environment.
- Leaving on-site wastes that do not require off-site disposal or extended above-ground containerization.
- Complying with federal ARARs, to the extent practicable.
- Complying with state ARARs, as practicable.
- Careful planning and coordination for IDW management.
- Minimizing the quantity of generated wastes.

The specific elements of the approach are as follows:

- Characterizing IDW through the use of existing information (manifests, Material Safety Data Sheets, previous test results, knowledge of the waste generation process, and other relevant records) and best professional judgment.
- Delineating an AOC unit for leaving RCRA hazardous soil cuttings within the unit.

- Containerizing and disposing of RCRA hazardous ground water, decontamination fluids, and PPE and DE (if generated in excess of 100 kg/month) at RCRA Subtitle C facilities.
- Leaving on-site RCRA nonhazardous soil cuttings, ground water, and decontamination fluids preferably without containerization and testing.

EPA does not recommend removal of wastes from all sites and, in particular, from those sites where IDW does not pose any immediate threat to human health or the environment. Removing wastes from all sites would not benefit human health and the environment and would result in spending a significant portion of the total funds available for the site assessment program, thus impairing EPA's ability to successfully meet the goals of the program.

1.0 INTRODUCTION

In the process of collecting environmental samples during Superfund site inspections (SIs), site investigators generate many different types of potentially contaminated investigation-derived wastes (IDW) that include soil, ground water, used personal protective equipment (PPE), decontamination fluids, and disposable sampling equipment (DE). The National Contingency Plan (NCP)⁽¹⁾ requires that managing (handling) of IDW attains all applicable or relevant and appropriate requirements (ARARs) to the extent practicable considering the exigencies of the situation. To comply with ARARs, site managers need to be familiar with these requirements and how the Environmental Protection Agency interprets them.

1.1 PURPOSE

This document provides guidance on determining and interpreting ARARs, and highlights EPA's recommended approach to handling IDW in compliance with these requirements. The guidance is intended to assist site inspection managers (SM), EPA regional project officers (RPOs), EPA Site Assessment Managers (SAMs), state environmental agencies, potentially responsible parties (PRPs), and others involved in Superfund site assessment work. The approach presented reflects EPA's goal to protect human health and the environment, addresses the most typical scenarios that the SM may encounter, and describes cost-efficient methods of handling both hazardous and non-hazardous IDW.

1.2 ORGANIZATION OF THE GUIDANCE

This guidance consists of seven sections:

- Section 1 - Introduction.
- Section 2 describes regulatory requirements and policy concerns, with emphasis on Resource Conservation and Recovery Act (RCRA)⁽²⁾ regulations.
- Section 3 discusses the distinction between IDW containing Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances and RCRA hazardous wastes based on their regulatory definitions.
- Section 4 stresses planning for IDW generation and management as the most important factor of the comprehensive approach to handling IDW. This section also presents the IDW disposal decision tree intended as a quick reference for site inspection managers.
- Section 5 describes the implementation of the IDW management plan.
- Section 6 discusses costs involved in both on-site and off-site IDW handling.
- Section 7 briefly describes available subcontracting procedures for IDW transportation and disposal.

2.0 REGULATORY REQUIREMENTS AND POLICY CONCERNS

A variety of IDW are generated during CERCLA SIs. Many of these wastes contain substances considered hazardous under CERCLA or regulated under various federal statutes such as the Toxic Substances Control Act (TSCA), Clean Water Act (CWA), Safe Drinking Water Act (SDWA), Clean Air Act (CAA), and RCRA. Even though all of these statutes can be ARARs for CERCLA actions, the application of these laws to handling IDW generated during the SI can be difficult and confusing, since none specifically addresses the management of IDW generated during the SI.

The National Contingency Plan (NCP)⁽¹⁾ and the proposed amendment to the NCP⁽³⁾ ("Procedures for Planning and Implementing Off-Site Response Actions") codifying the CERCLA off-site policy⁽⁴⁾, present EPA's interpretation of how these laws apply to response action investigations such as SIs.

2.1 REQUIREMENTS OF CERCLA AND THE NCP

CERCLA authorizes EPA to respond to releases or threats of releases of hazardous substances into the environment. CERCLA response actions include removal actions, remedial investigations, and other response actions financed by Superfund. CERCLA Section 101 (23) defines "removal" to include actions that may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances. Thus, CERCLA studies, site assessments, and field investigations are considered removal actions. The NCP directs that removal actions attain ARARs "to the extent practicable considering the exigencies of the situation" (unless the ARAR is waived) (see Section 300.415 (i) of the NCP). Practicability is assessed by examining factors such as the urgency of the situation and the scope of the removal action to be conducted. Section 2.2 of this guidance discusses procedures for CERCLA off-site actions.

The preamble to the NCP clarifies the extent to which ARARs apply to removal actions:

"[Because] the purpose of removal actions generally is to respond to a release or threat of release of hazardous substances, pollutants, or contaminants so as to prevent, minimize, or mitigate harm to human health and the environment... [and] removals are distinct from remedial actions in that they may mitigate or stabilize the threat rather than comprehensively address all threats at a site... removal actions cannot be expected to attain all ARARs... Indeed, the imposition by Congress of limits on the amount of time and Fund money that may be spent conducting a removal action often precludes comprehensive remedies by removal actions alone" (55 FR 8695, March 8, 1990) (emphasis added).

Because investigative activities are categorized as removal actions, the preamble to the NCP sets out the following IDW management approach:

"... the field investigation team should, when handling, treating or disposing of investigation-derived waste on-site, conduct such activities in compliance with ARARs to the extent practicable, considering the exigencies of the situation. Investigation-derived waste that is transported off-site (e.g., for treatability studies or disposal) must comply with applicable requirements of the CERCLA off-site policy" (55 FR 8756, March 8, 1990) (emphasis added).

In determining what is "practicable" in the context of an SI, the Agency may take into account the very limited scope and purpose of the activity, and in particular the fact that it is not intended to address contamination at the site (other than to gather information about it). This means that, as a general matter, actions taken at the SI that leave conditions essentially unchanged (such as returning soil cuttings to the location from which they were taken) should not require a detailed analysis of ARARs or assurance that conditions at the site after the action is taken will comply with ARARs. At the same time, site personnel should ensure that their handling of IDW does not create

additional hazards at the site. (For example, leaving highly contaminated soil cuttings on the surface could create an additional risk of direct exposure.)

Potential ARARs include (but are not limited to) RCRA⁽²⁾, TSCA, CWA, CAA, and state legally enforceable regulations. The most important ARARs for managing IDW are RCRA and TSCA (addressed in Sections 2.4 and 2.5 of this guidance). The preamble to the NCP discusses when CERCLA actions (including activities during SIs) constitute "land disposal," which triggers several significant requirements, including RCRA land disposal restrictions (LDRs)⁽³⁾ (55 FR 8759-8762).

Section 300.400(g) (4) of the NCP defines state ARARs as "those state standards that are promulgated, are identified by the state in a timely manner, and are more stringent than federal requirements." Section 2.7 of this guidance discusses the issue of state ARARs.

Before ARARs can be determined, it is necessary to determine what contaminants, if any, are present in the IDW. Section 3.0 of this guidance discusses the process of identifying contaminants. In general, such identification should be done based on available information about the site and professional judgment rather than testing.

In brief, compliance with the NCP can generally be assured by:

- (1) Identifying contaminants, if any, present in IDW based on existing information and best professional judgment; testing is not required in most circumstances.
- (2) Determining ARARs (particularly RCRA and state laws), and the extent to which it is practicable to comply with them.
- (3) Delineating an area of contamination (AOC) unit based on existing information and visual observation if soil cuttings are RCRA hazardous (see Section 2.4.2).
- (4) Burying RCRA hazardous soil cuttings within the AOC unit, so long as no increased hazard to human health and the environment will be created. Containerization and testing are not required.
- (5) Containerizing RCRA hazardous ground water and other RCRA hazardous IDW such as PPE, DE, and decontamination fluids for off-site disposal.

The following sections of this guidance provide guidelines for determining ARARs and identifying IDW.

2.2 OFF-SITE RESPONSE ACTIONS POLICY

CERCLA Section 121 (d) (3) requires that hazardous substances, pollutants, or contaminants that are transferred off-site for treatment, storage, or disposal during CERCLA response actions must be sent to facilities operating in compliance with RCRA and other applicable laws or regulations. In 1987, EPA issued a more detailed policy (the "off-site policy" – OSWER Directive No. 9834.11, November 13, 1987⁽⁴⁾) that describes procedures that must be followed when a response action under CERCLA involves off-site management of CERCLA wastes. This policy applies to all IDW that are transported to an off-site disposal facility, but does not itself require that all RCRA hazardous wastes and CERCLA hazardous substances be disposed off-site. Sections 2.4.3, 2.4.4, 2.5 and 2.6 of this guidance present the criteria that RCRA Subtitle C facilities, RCRA Subtitle D facilities, TSCA and CWA-regulated facilities must meet. The off-site policy is complex, and questions that arise should be referred to the appropriate EPA Office of Regional Counsel.

The off-site policy provides acceptability criteria for facilities that receive wastes from CERCLA-authorized or -funded response actions, including RCRA land disposal, treatment, storage, and permit-by-rule facilities, and for

non-RCRA Subtitle C facilities (such as facilities permitted to receive waste under TSCA) that receive non-RCRA wastes. Section 2.4.3 of this guidance discusses requirements for RCRA facilities that receive such wastes. In addition, the off-site policy lists procedures for implementing off-site response actions, incorporates the SARA requirements, and provides detailed procedures for issuing and reviewing unacceptability determinations. Off-site actions must comply with applicable requirements of this policy.

The off-site policy also establishes criteria for selecting an appropriate disposal facility. The policy requires that all RCRA hazardous wastes and CERCLA hazardous substances (which include RCRA hazardous wastes as a subset) generated during CERCLA response actions that are transferred off-site be managed in facilities that are not only in compliance with RCRA and other federal and state requirements, but also meet the compliance and release criteria outlined in the policy.

EPA has proposed an off-site rule (Part 300.440 of the NCP) that would codify the requirements of CERCLA Sections 121 (d) (3) and the off-site policy, and prevent CERCLA response actions from contributing to present or future environmental problems "by directing these wastes to management units determined to be environmentally sound" (53 FR 48218, November 29, 1988⁽¹⁾). Once the rule is issued in final form, it will supersede the policy. Note that the proposed off-site rule contains provisions regarding materials sent to laboratories for testing and analysis. These provisions do not relate to the types of IDW discussed in this guidance.

2.3 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

ARARs must be identified on a site-specific basis, and the site manager must determine whether a requirement is applicable and, if not, whether the requirement is relevant and appropriate. A requirement under environmental laws may be either "applicable" or "relevant and appropriate," but not both.

For dealing with IDW, the most important federal ARAR is RCRA because it specifically regulates all aspects of transportation, treatment, storage, and disposal of hazardous wastes. Other major federal ARARs of concern include CWA, CAA, SDWA, and TSCA. State ARARs should be attained where they are promulgated and legally enforceable (see Section 2.7 of this guidance).

Much of what is discussed in this guidance is directly applicable; however, there are instances where requirements may not be legally applicable, but are nevertheless relevant (addressing a similar situation or problem) and appropriate (being well-suited to a particular site). Relevant and appropriate requirements should be considered in the same way as those that are directly applicable. For instance, such situations might include circumstances where a highly toxic waste constituent is suspected, a large volume of waste may be generated or the nature of the property (e.g. residential or proximity to public facilities) is of concern. Section 4.6 of this guidance discusses factors identified for off-site disposal of IDW and management options when an ARAR has been determined.

2.4 RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

The Resource Conservation and Recovery Act (RCRA) of 1976, an amendment to the Solid Waste Disposal Act (SWDA) of 1965, was passed to protect human health and the environment, to conserve energy and natural resources, and to quickly reduce or eliminate the generation of hazardous wastes. RCRA currently has 10 discrete sections (Subtitles) that address specific waste management activities. Two of these Subtitles, and their implementing regulations, may be ARARs for IDW handling: Subtitle C (Hazardous Waste Management) and Subtitle D (Solid Waste Management).

The RCRA Hazardous and Solid Waste Amendments (HSWA) of 1984 established land disposal restrictions (LDRs) for RCRA hazardous wastes and mixtures of RCRA hazardous wastes with other substances, including those regulated under TSCA. Under RCRA regulations, restricted RCRA wastes may only be land disposed after treatment to specified levels. RCRA may be an ARAR for IDW handling if the IDW generated during the SI contain RCRA hazardous wastes. In that case, the SM should evaluate compliance (to the extent practicable) with LDRs.

2.4.1 LAND DISPOSAL RESTRICTIONS

Land disposal, as defined by RCRA Section 3004 (k), includes any placement of RCRA hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome or salt bed formation, or underground mine or cave. For LDR purposes, the Agency commonly uses "land disposal" and "placement" as synonymous terms.

For the purpose of the LDRs, HSWA divides RCRA hazardous wastes into several groups (e.g., First Third, Second Third, California list wastes) and specifies dates, referred to as the statutory deadlines, by which treatment standards for each group must be established. The final statutory deadline for wastes listed or identified before November 8, 1984 was May 8, 1990. For wastes identified after November 8, 1984, EPA must determine whether these wastes will be prohibited from land disposal within 6 months of listing or identification. If EPA fails to promulgate treatment standards within 6 months for newly identified wastes, the wastes can be land disposed without restriction until the appropriate treatment standards are promulgated. After the statutory deadline for wastes identified before November 8, 1984, the wastes are "restricted" or "prohibited" and cannot be disposed in land unless:

- The wastes are treated to meet promulgated treatment standards.
- It can be demonstrated that hazardous constituents will not migrate from the land disposal unit as long as the wastes remain hazardous.
- The wastes are subject to treatment standard variances.
- The specific waste has received a national capacity variance.

It should be noted that the NCP establishes a presumption that treatment to best demonstrated available technology (BDAT) standards is inappropriate as a standard for soil removed from CERCLA sites, and that a treatability variance is appropriate in such circumstances (see 55 FR 8760-8762).

To determine if LDRs are applicable to IDW management, the SM must evaluate whether:

- (1) The IDW are RCRA hazardous waste.
- (2) The RCRA hazardous waste is regulated under the LDRs.
- (3) The anticipated approach to IDW management constitutes "placement" (land disposal) of the generated wastes. (For the purpose of the LDRs, EPA considers itself a waste generator when the response action involves treatment, storage, or disposal of RCRA hazardous wastes. If the SI does not involve RCRA hazardous IDW disposal, RCRA regulations are not triggered.)

LDRs apply only if the answer to all three questions is "yes." In some cases, as discussed in section 2.3, LDRs may be "relevant and appropriate" even if not strictly applicable.

2.4.2 AREA OF CONTAMINATION CONCEPT AND ITS IMPLICATIONS

An important consideration in determining whether LDRs apply is whether land disposal of IDW has occurred. If IDW are merely being moved within the same "area of contamination" (AOC), EPA does not consider "land disposal" to have occurred, so that LDRs are not triggered, even if IDW contain RCRA hazardous material. Therefore, if IDW are being moved only within an AOC, it is unnecessary to determine whether they are subject to LDRs.

EPA has not promulgated a regulatory definition of an AOC. However, the preamble to the NCP (55 FR 8760) states that "EPA generally equates the CERCLA area of contamination with a single RCRA land-based unit, usually a landfill." EPA noted that under RCRA, the term "landfill" could include a non-discrete land area on or in which there is generally dispersed contamination." The contamination in an AOC may vary in concentration and type of contaminant. Further guidance on the AOC concept is provided in 55 FR 8760 (March 8, 1990), 53 FR 51444 (December 21, 1988), and in Superfund LDR Guide #5 (OSWER Directive 9347.3-05, July 1989).

The AOC concept applies only to contaminated soil (and sediments) from the inspected site. The AOC concept does not affect the approach for managing IDW that did not come from the AOC, such as PPE, DE, decontamination fluids, and ground water. The latter materials, if RCRA hazardous, must be containerized and disposed off-site.

Examples of AOCs include: a waste source such as waste pit, landfill, waste pile along with the surrounding contaminated soil, or the sediments in a contaminated stream. Depending on site characteristics, one or more AOCs may be delineated. CERCLA sites often consist of several AOCs. To determine if separate AOCs can be delineated within the site, and if RCRA regulated wastes are present within the AOCs, the site manager should collect sufficient information about the site as early as possible, preferably prior to starting field work. Determining AOCs may prove difficult if there is little available information or no visual contamination. In such cases, site managers may use their best professional judgment to delineate AOCs (e.g., a small area immediately adjacent to a borehole may be part of an AOC if the area is covered with surface soil similar to soil from the borehole).

Once the AOC units are determined, the site manager must evaluate whether an anticipated IDW handling approach constitutes land disposal. In general, land disposal does not occur when wastes are:

- Moved within the unit.
- Capped in place.
- Treated in situ (without placing the waste in another unit for treatment).
- Processed within the AOC to improve structural stability (without placing the waste into another unit for processing).

Superfund LDR Guide #5, "Determining when Land Disposal Restrictions (LDRs) are Applicable to CERCLA Response Actions,"⁽⁵⁾ states that land disposal occurs when:

- Wastes from different AOCs are consolidated into one AOC.
- Wastes are moved outside of an AOC (for treatment and storage) and returned to the same or a different AOC.
- Wastes are excavated from an AOC, transferred to a separate unit such as a tank, surface impoundment, or incinerator that is within the AOC, and then redeposited into the AOC.

In addition, land disposal occurs if wastes removed from an AOC are stored (e.g., placed in drums outside the AOC) prior to being returned to the AOC.

Thus, under the NCP, the AOC unit concept means that:

- Land disposal does not occur when wastes are left in place, or moved or stored within a single AOC unit.
- Leaving RCRA hazardous soil on-site within the AOC unit does not constitute disposal and does not

trigger RCRA regulations, unless the SM determines that the wastes would significantly increase risks to human health and the environment (e.g., fire or explosion) and must be disposed of off-site.

- RCRA hazardous ground water, decontamination fluids, PPE, and DE should be containerized and disposed off-site.
- Moving RCRA hazardous soil cuttings from one AOC to another AOC triggers the LDRs.

If IDW cannot be deposited within the delineated AOC, the site manager must comply with all LDRs to the extent practicable. This means that the IDW should be transferred to an off-site RCRA Subtitle C hazardous waste treatment, storage, or disposal facility that complies with the off-site policy.

2.4.3 REQUIREMENTS FOR RCRA SUBTITLE C TREATMENT, STORAGE, AND DISPOSAL FACILITIES

The RCRA Subtitle C standards⁽²⁾ cover hazardous waste treatment, storage, and disposal (TSD) facilities. The specific standards govern installation, operation, inspection, and closure of containers, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, and other units.

Off-site TSD facilities receiving IDW must have RCRA permits to operate. Facilities that are permitted under another statute to receive hazardous wastes are eligible for RCRA permits without filing RCRA permit applications. These facilities, referred to as "permit-by-rule," include ocean disposal barges or vessels, injection wells, and publicly-owned treatment works (POTWs). The NCP exempts EPA from the RCRA permitting requirement while conducting CERCLA actions on-site. However, EPA should attempt to consider RCRA storage regulations as relevant and appropriate when containerizing and storing wastes on-site, even though a permit application will not be filed.

Generally, the RCRA storage regulations require a generator to: (1) place the waste in containers or tanks; (2) satisfy the standards for containers or tanks; (3) clearly indicate the waste accumulation date on the containers; (4) mark the containers and tanks as "hazardous waste"; and (5) comply with the requirements for owners and operators of hazardous waste TSD facilities. In addition, LDRs prohibit the storage of RCRA restricted waste unless the storage is to accumulate sufficient quantities of the waste to promote proper disposal, treatment, or recovery. When storing hazardous waste for more than 90 days, the SM should consider the storage requirements of 40 CFR Parts 262 and 264 as relevant and appropriate and comply with them to the extent practicable unless the site falls within one of the following categories of waste generators:

1. Conditionally exempt small quantity generators (producing no more than 100 kilograms of hazardous waste in a calendar month), and
2. Small quantity generators producing between 100 kg and 1,000 kg of hazardous waste in a calendar month.

In the cases listed above, the SM will have to comply with the guidelines provided in 40 CFR Part 261.5(g)(2) and 40 CFR Part 262.34.

Any facility receiving IDW containing hazardous wastes must comply with all RCRA Subtitle C design, operation, and closure requirements. In addition, the off-site policy presents additional criteria for selecting an appropriate disposal facility. The most important criteria⁽⁴⁾ that a RCRA Subtitle C facility must meet if it receives RCRA hazardous IDW are:

- There must be no record of any relevant violations at or affecting the receiving unit.
- There must be no releases at receiving units of land disposal, treatment, or storage facilities. Note that

a land disposal facility may consist of one or more land disposal units, including landfills, surface impoundments, land treatment units, and piles.

- There must be no significant releases (as determined by EPA) from non-receiving units at treatment and storage facilities that are not controlled by corrective action.
- Waste cannot be disposed of at any unit of a land disposal facility, if any one unit at the facility has releases that are not controlled by corrective action.
- The land disposal facility must demonstrate compliance with the minimum technology requirements of RCRA Section 3004 (o).

The off-site policy also applies to RCRA permit-by-rule facilities receiving RCRA hazardous waste. These facilities are subject to the same requirements as other RCRA Subtitle C facilities and must be inspected for compliance with the applicable RCRA requirements, as well as be inspected by the appropriate authorities for compliance with other applicable laws. Permit-by-rule facilities that receive only nonhazardous materials do not need RCRA permits but must be inspected by local agencies for compliance with applicable laws.

2.4.4 APPLICATION OF RCRA REQUIREMENTS TO IDW MANAGEMENT

RCRA requirements apply to management of IDW during SIs in the following manner: if IDW is stored or disposed off-site, then the SM must comply with all RCRA and ARAR storage requirements; if IDW are stored on-site, then the SM must comply with RCRA to the extent practicable.

Off-site management of RCRA hazardous IDW may also involve treatment, storage, and disposal of RCRA hazardous wastes in accordance with all applicable guidelines. For TSD facilities constructed solely as part of a CERCLA response action, RCRA operating permits are not required.

IDW generated during the SI may require on-site storage in containers while awaiting off-site disposal. Although CERCLA exempts response actions conducted entirely on-site from permit requirements (see CERCLA Section 121 (e) (1)), EPA's policy is to follow the storage regulation practices required for RCRA generators who wish to avoid obtaining permits (40 CFR Parts 240-280). These requirements are applicable if the site manager determines that the containerized IDW are RCRA hazardous waste. RCRA hazardous IDW containerized and stored on-site must be properly disposed within a regulatory timeframe. There are cases where this may not be possible and storage does not require a permit, although EPA should try to expedite removal as much as possible. Note that accumulation of IDW, even on-site, in units other than containers or tanks may result in creation of RCRA units that are subject to various RCRA requirements such as closure, permitting, and ground water monitoring.

2.4.5 CRITERIA FOR RCRA SUBTITLE D FACILITIES

RCRA Subtitle D⁽²⁾ regulates disposal of nonhazardous wastes in facilities such as municipal landfills. RCRA nonhazardous IDW, such as personal protection equipment (PPE) and disposable equipment (DE), may be disposed of in a Subtitle D facility. Other RCRA nonhazardous IDW (e.g., soil cuttings or ground water) should go to a Subtitle D facility only in very rare circumstances (these wastes should be disposed on-site). The off-site policy establishes requirements for selecting an appropriate RCRA Subtitle D facility for IDW disposal:

- The facility must have a compliance inspection prior to receiving CERCLA IDW and this inspection must not identify any noncompliance with relevant federal and state regulations at or affecting the receiving unit.
- Environmentally significant releases (as determined by EPA) of hazardous substances must be controlled by corrective action.

2.5 TOXIC SUBSTANCES CONTROL ACT

RCRA nonhazardous IDW containing PCBs or asbestos must, in certain circumstances, be disposed of at facilities regulated under the Toxic Substances Control Act (TSCA). While asbestos is not a common contaminant at CERCLA sites, PCBs can be found at about 17 percent of CERCLA sites. Regulations governing the management of IDW containing PCBs, which are generally based on PCB concentrations in waste, are found at 40 CFR 761.60.

TSCA requirements for handling PCBs⁽⁶⁾ call for incineration of PCB-contaminated liquid material with concentrations greater than 500 ppm. For liquid material with PCB concentrations between 50 and 500 ppm, the principal alternative to incineration is disposal in a TSCA chemical waste landfill. Any receiving unit must meet the compliance and release criteria for non-RCRA units as set out in the off-site policy, in order to be acceptable. These PCBs may also be destroyed by using a TSCA-approved method that provides a level of performance equivalent to incineration. Nonliquid PCBs at concentrations greater than or equal to 50 ppm may be incinerated, treated by a equivalent TSCA-approved method, or disposed in a TSCA chemical landfill. PCB-contaminated material with concentrations less than 50 ppm are generally not regulated under TSCA, and may be disposed in acceptable Subtitle D facilities.

Even though IDW containing PCBs alone are not RCRA hazardous wastes, IDW containing PCBs mixed with RCRA hazardous wastes are regulated under RCRA LDRs as part of the California list wastes^(4,5). Since PCBs can be governed by RCRA and TSCA, the SM must determine whether RCRA (in the case of PCBs mixed with RCRA wastes) or TSCA regulations, or both, are applicable.

2.6 CLEAN WATER ACT

The Clean Water Act (CWA) addresses site-specific pollutant discharge limitations and performance standards for specified industries to protect surface water quality. At the SI, the most likely situation involves indirect discharge of IDW water, regulated under CWA, to POTWs for treatment and disposal. A less likely situation may involve direct discharge, either on-site or off-site, to surface water.

RCRA hazardous wastewater can be disposed of at POTWs that have a RCRA permit-by-rule and that meet the off-site policy criteria for a facility receiving RCRA hazardous waste. Disposal at a POTW of nonhazardous wastewaters from CERCLA sites is an option^(7,8) if the POTW is acceptable under the off-site policy (Appendix C). EPA regulations cover general and specific prohibitions on discharges⁽⁹⁾ to POTWs.

The following criteria ⁽¹⁰⁾ should be used in selecting an appropriate POTW facility:

- Compliance with all applicable laws.
- The quantity and quality of the CERCLA IDW must be compatible with the POTW.
- The POTW must have no unpermitted "releases."
- The concentration of any hazardous substance must meet applicable pretreatment standards (CERCLA IDW cannot upset the facility's operation and violate the permit).
- The POTW must be in compliance with its National Pollutant Discharge Elimination System (NPDES) permit.
- The transport of IDW to the POTW and its placement in an impoundment must not create a potential for ground water contamination.

2.7 STATE REQUIREMENTS

State ARARs present an array of specific problems for CERCLA sites because their goals and methods often differ from federal environmental laws. CERCLA Section 121 and Section 300.400 (g) of the NCP provide that only those state standards that are promulgated, identified by the state in a timely manner, and more stringent than federal requirements may generally be ARARs. To be considered "promulgated," a standard must be legally enforceable and of general applicability. A waiver is available if the state standard is applied only to CERCLA sites¹¹. When dealing with IDW, SMs must comply (to the extent practical) with state promulgated and enforceable requirements that are more stringent than federal requirements.

State hazardous waste regulations are among the most important environmental laws that may differ, in some states, from federal law. EPA has authorized some states to administer and enforce RCRA hazardous waste management programs. Regulations in these states may be more stringent or have a greater scope of coverage than the federal RCRA requirements. If the CERCLA site is in a state with an authorized RCRA program, the RCRA requirements promulgated by the state will replace the federal requirements as potential ARARs.

In addition to state RCRA regulations, other state legally enforceable standards may govern the handling of wastes. However, the SM should be aware that ARAR waivers are generally available for state requirements specifically aimed at CERCLA sites (see CERCLA section 121(d)(4)(E); 40 CFR 300.430(f)(1)(ii)(C)(5)).

3.0 IDENTIFICATION OF INVESTIGATION-DERIVED WASTES

To properly deal with IDW from SIs, the SM must know whether IDW contain CERCLA hazardous substances, and whether these hazardous substances constitute either RCRA hazardous wastes or contaminants regulated under other statutes. This section is intended to help the SM ascertain the types of IDW generated during the SI and, in particular, to determine whether IDW are either RCRA listed or characteristic hazardous waste.

There are several types of IDW generated during the SI. Examples include the following: (1) soil cuttings and drill mud from soil boring or monitoring well installations; (2) purge water removed from wells before ground water samples are collected; (3) water, solvents, or other fluids used to decontaminate field equipment and PPE; and, (4) PPE and DE. These IDW can be contaminated with various CERCLA hazardous substances. To handle IDW in compliance with regulations, reasonable efforts should be made to characterize the wastes.

3.1 EXTENT OF EFFORTS TO CHARACTERIZE WASTES

The efforts made to characterize IDW should be consistent with the limited scope and purpose of the SI. In most cases, the limited scope of an SI makes it impracticable to characterize wastes to the same extent that might be done in a remedial investigation/feasibility study (RI/FS). In particular, Contract Laboratory Program (CLP) testing would not be warranted in most cases; instead, the nature of the wastes should be assessed by applying best professional judgment, using readily available information about the site (such as manifests, storage records, preliminary assessments, and results of earlier studies that may have been conducted and are available to the Agency, as well as direct observation of the IDW for discoloration, odor, or other indicators of contamination). The Agency has specifically indicated that IDW may be assumed not to be "listed" wastes under RCRA unless available information about the site suggests otherwise (53 FR 51444, December 21, 1988). Similarly, RCRA procedures for determining whether a waste exhibits RCRA hazardous characteristics do not require testing if the decision can be made by "applying knowledge of the hazard characteristic in light of the materials or process used" (40 CFR 262.11(c)). The level of such knowledge required to make a determination with respect to IDW may take into account considerations of practicability and should reflect the limited scope of the activity. In most instances, a determination may be possible based on available information and professional judgment.

The fact that extensive resources need not be used in characterizing IDW does not mean that IDW can be assumed to be nonhazardous unless clearly proven otherwise. Rather, the question is whether, given the limited information that is likely to be available, the SM considers it more likely than not that the wastes are hazardous.

It should be noted that characterizing IDW is only the first step. For example, once it has been determined that a RCRA hazardous waste is involved, the guidelines discussed in Section 2.4 for determining the extent to which RCRA requirements must be complied with should be considered. Furthermore, the degree of certainty with which IDW are characterized during site inspections will be less than during remedial actions. Therefore, even if the waste is deemed not to be RCRA hazardous, RCRA requirements may be considered relevant and appropriate under the specific circumstances at the site (see section 3.2.1).

3.2 RCRA HAZARDOUS WASTES AND CERCLA HAZARDOUS SUBSTANCES

Some CERCLA hazardous substances are RCRA hazardous wastes. Another category of CERCLA hazardous substances are PCBs, which are fairly common at CERCLA sites. Identification of RCRA hazardous wastes and PCB-contaminated IDW is important for making appropriate management decisions (see Sections 2.5, 3.2.1, and 3.2.2 of this guidance). The SM must know the difference between RCRA hazardous wastes and other CERCLA hazardous substances because the presence of RCRA hazardous IDW invokes special technical considerations and

management decisions due to RCRA regulations (particularly the LDRs). EPA recommends using knowledge of IDW rather than testing the wastes to characterize them.

The SM should not assume that all IDW contaminated with CERCLA hazardous substances are RCRA hazardous wastes, in the absence of positive evidence (e.g., manifests, records, knowledge of generation processes) to support such an assumption. At the same time, however, the SM should determine whether IDW are RCRA hazardous wastes, to the extent practicable, as discussed above.

The most important characterization decision is whether IDW contain "hazardous waste" under RCRA. This is relevant to the ARAR status of LDRs and other RCRA requirements, and whether waste disposed of off-site must be disposed of in a Subtitle C or Subtitle D facility. A solid waste is a RCRA hazardous waste⁽²⁾ if it contains a listed waste or exhibits any of the hazardous characteristics and is not excluded from regulation as a hazardous waste. (For purposes of the RCRA Subtitle C regulations, a solid waste is any discarded material (solid, sludge, liquid, and compressed gas) that is not excluded under SWDA.) IDW generated during the SI may either exhibit a RCRA characteristic or contain RCRA listed waste.

Under EPA regulations, soil and ground water may be considered contaminated environmental media. If they contain listed hazardous waste, they must be managed as RCRA hazardous wastes as long as they "contain" the listed waste. If IDW exhibit RCRA characteristics, they also have to be managed as RCRA hazardous wastes.

To properly handle IDW, the SM must make a reasonable effort to ascertain if they are RCRA hazardous. When the SM determines that IDW do not fall in any listed waste category and does not display RCRA characteristics, the wastes are not RCRA hazardous. Sections 3.2.1 and 3.2.2 help determine if IDW are RCRA characteristic wastes or if they contain RCRA hazardous listed wastes.

Even if the IDW do not contain RCRA "hazardous waste," the SM should determine whether they contain other CERCLA hazardous substances. CERCLA hazardous substances include, in addition to RCRA hazardous wastes, substances, elements, compounds, solutions, or mixtures designated as hazardous or toxic under CERCLA itself or under the authority of other laws such as TSCA, CWA, CAA, and SDWA. Therefore, even where RCRA is not applicable, one of these statutes may be an ARAR. EPA presents a list of these hazardous substances in 40 CFR Part 302.4, Table 302.4.

3.2.1 RCRA CHARACTERISTIC WASTES

A solid waste is a RCRA characteristic hazardous waste if it exhibits the characteristic of ignitability, corrosivity, reactivity (as defined in 40 CFR Part 261, Subpart C), or toxicity (toxicity characteristic leaching procedure, TCLP, as described in 55 FR 11796-11877, March 29, 1990⁽¹¹⁾).

IDW exhibit ignitability if:

- They are a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and have a flash point lower than 60°C (140°F).
- They are not a liquid and are capable, under standard temperature and pressure, of causing fire and, when ignited, create a hazard.
- They are an ignitable compressed gas as defined in 49 CFR 173.300.
- They are an oxidizer as defined in 49 CFR 173.151.

IDW exhibit corrosivity if:

- They are aqueous and have a pH less than or equal to 2 or greater than or equal to 12.5.
- They are a liquid and corrode steel at a rate greater than 6.35 mm (0.25 in.) per year at a test temperature of 55°C (130°F).

IDW exhibit reactivity if:

- They are normally unstable and readily undergo violent change without detonating.
- They react violently with water.
- They form potentially explosive mixtures with water.
- When mixed with water, they generate toxic gases, vapors or fumes that pose a danger to human health or the environment.
- They are a cyanide- or sulfide-bearing waste capable of (at the pH range of 2 to 12.5) generating toxic gases that can present a danger to human health or the environment.
- They are capable of detonation or explosive decomposition.
- They are a forbidden explosive as defined in 49 CFR 173.51.

IDW exhibit TCLP-toxicity when its leachate contains certain contaminants at levels exceeding their regulatory thresholds⁽¹⁰⁾. The TCLP has replaced the EP-toxicity test for identifying RCRA characteristic wastes. The new procedure expands the number of chemicals regulated as hazardous wastes by adding 25 organic constituents to the previous RCRA list of toxic chemicals, and by establishing regulatory levels for these chemicals (Appendix C). The TCLP is designed to determine the mobility of both organic and inorganic contaminants present in liquid, solid, and multiphase wastes. A water containing less than 0.5 percent dry solid material, filtered through a 0.6 to 0.8-um glass fiber filter, is defined as the TCLP extract. If this extract contains a regulated compound above its threshold level, then the water is hazardous by TCLP characteristic. If the filtered extract from the solid phase contains a regulated compound above its threshold level, then the solid material is RCRA hazardous.

To identify RCRA characteristic waste⁽¹¹⁾, the SM may rely on knowledge of the properties of the substances from, for example, the Material Safety Data Sheets (MSDS) prepared by manufacturers, or on the results of tests described in 40 CFR 261.21 - 261.24. EPA recommends using knowledge of the properties of materials instead of testing since most CERCLA wastes do not exhibit these RCRA characteristics. Therefore, the SM should not test IDW, particularly if they are a soil of known RCRA characteristics, the AOC concept is applicable, and the wastes will be burned on-site.

3.2.2 RCRA LISTED HAZARDOUS WASTES

Any type of IDW that contains listed hazardous wastes should be considered a RCRA hazardous waste. EPA has developed four lists of RCRA hazardous wastes according to the sources of their origin and toxicity (40 CFR Part 261, Subpart D). These lists contain:

- Wastes from nonspecific sources (F wastes). Examples include spent halogenated solvents (tetrahaloroethylene, methylene chloride), nonhalogenated solvents (xylene, acetone, ethyl ether), still bottoms from the recovery of these spent solvents, and some wastewater treatment sludges.
- Wastes from specific sources (K wastes). Examples include wastewater treatment sludges from the production of zinc yellow and chrome green pigments, and still bottoms from the distillation of benzyl chloride.
- Discarded commercial chemical products, manufacturing intermediates, off-specification (off-spec) chemicals (which, if they met specifications, would be listed), and container and spill residues that are "acutely hazardous" (P-wastes). Examples include aldrin and phosgene.
- Discarded commercial chemical products, manufacturing chemical intermediates, or off-spec commercial chemical products that are "toxic" (U-wastes). Examples include chlorobenzene and mercury.

To ascertain whether IDW constitute RCRA listed hazardous waste, the SM must first determine if the IDW contain a component that may be a listed hazardous waste, and then decide whether that component meets the regulatory description of that listed waste.

For example, to determine if solvents contaminating IDW are RCRA spent solvent F001-F005 wastes, the SM must know if:

- The solvents are spent and cannot be reused without reclamation or cleaning.
- The solvents were used exclusively for their solvent properties.
- The solvents are spent mixtures and blends that contained, before use, a total of 10 percent or more (by volume) of the solvents listed in F001, F002, F004, and F005.

If the solvents contained in the IDW are RCRA listed wastes, the IDW are RCRA hazardous waste. When the SM does not have guidance information on the use of the solvents and their characteristics before use, the IDW cannot be classified as containing a listed spent solvent. When the solvents are not listed and IDW are not a characteristic waste, the IDW should be declared nonhazardous.

For other F and K wastes, the SM must know the generation process information (about each waste contained in the RCRA waste) described in the listing. For example, for IDW to be identified as containing K001 wastes that are described as "bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol," the SM must know the manufacturing process that generated the wastes (treatment of wastewaters from wood preserving process), feedstocks used in the process (creosote and pentachlorophenol), and the process identification of the wastes (bottom sediment sludge).

P and U wastes cover only unused and unmixed commercial chemical products, particularly spilled or off-spec products. Not every waste containing a P or U chemical is a hazardous waste. To determine whether a CERCLA IDW contains a P or U waste, the SM must have direct evidence of product use. In particular, the SM should ascertain, if possible, whether the chemicals are:

- Discarded (as described in 40 CFR 261.2(a) (2)).
- Either off-spec commercial products or a commercially sold grade.
- Not used (soil contaminated with spilled unused wastes is a P or U waste).

- The sole active ingredient in a formulation.

Identification of a listed waste requires a great deal of care on the part of the SM, particularly if the IDW have to be disposed off-site. For instance, depending on its source and prior use benzene may be an F waste, U waste, or not a RCRA hazardous waste at all. The waste identification process requires access to manifests, storage records, records of waste sources and their prior use, and other information that is reasonably ascertainable during the SI. Visual inspection of the site or the waste generating process will sometimes be sufficient.

IDW from many SIs will not fit the definition of RCRA hazardous listed waste due to limited information. If there is a probability that investigation-derived soil cuttings contain a RCRA listed waste, and a site manager intends to leave them on-site within the AOC unit, a thorough evaluation of the waste is not necessary.

4.0 PLANNING FOR IDW GENERATION AND MANAGEMENT

The most important phase of IDW management is planning for waste generation and handling before field activity starts. In the planning phase of work, the SM must decide if IDW can be left on-site or must be disposed off-site. Since some sites may have both RCRA hazardous and RCRA nonhazardous IDW, the SM must be familiar with the NCP, and appropriate sections of RCRA, TSCA, CWA, and other relevant statutes.

Handling of RCRA hazardous IDW and IDW with high PCB concentrations (greater than 50 ppm) may involve either moving the IDW within an AOC unit, or containerization, storage, testing, treatment, and off-site disposal. Handling of RCRA nonhazardous IDW usually involves various methods of on-site disposal. EPA prefers to leave both RCRA hazardous and nonhazardous IDW on-site whenever it complies with regulations and does not pose any immediate threat to human health and the environment. This approach speeds up the site assessment process while avoiding high costs of off-site disposal, particularly when off-site disposal does not result in any benefits to human health and the environment.

The approach to IDW generating and handling must be described in the SI work plan which is subject to EPA approval. The SM must base the approach on available information and best professional judgment. The work plan should describe the logic behind the proposed approach to IDW handling, and in particular:

- Methods of waste quantity minimization.
- Types of waste.
- Quantity of waste.
- ARARs of concern, and limits of practicability in light of the scope of the SI.
- On-site and off-site handling methods, where necessary.
- Delineated AOCs for RCRA waste to be handled on-site.
- Containerization, storage, testing, and pick-up methods for wastes to be disposed off-site.

The description of the approach to IDW handling must be as detailed as possible, so the inspection team can execute the work plan without any major problems in the field. If the SI results in generating any IDW off-site, they should be handled the same way as if they were generated on-site.

4.1 AUTHORITY TO MANAGE IDW

EPA views IDW management as an inherent part of the site investigation process authorized under CERCLA Section 104 (e) (4). Should a site owner refuse to provide access, EPA has the authority to issue an administrative order, or seek a court order, to gain site access for environmental sampling. Non-compliance with such an order may result in imposing the sanctions authorized under CERCLA Section 104 (e) (5), including penalties.

EPA believes the approach contained in this guidance to be reasonable and protective of human health and the environment. The limited scope and purpose of the SI activity is not intended to address contamination at a particular site (other than to gather information about it). Generally, SI activities that leave conditions essentially unchanged (e.g., returning soil cuttings to the location from which they were taken) will comply with ARARs. The SM should seek to obtain the appropriate management approach for IDW outlined in this guidance when negotiating site access agreements.

Note, however, that some site circumstances may warrant exceptions to the IDW management approach outlined in this guidance. The SM should use professional judgment in recognizing situations where special steps are required to avoid creating additional threats to human health and the environment. When substantial doubt exists regarding the scope of EPA's authority to carry out the proposed plan for IDW management, the SM should consult legal counsel.

4.2 WASTE MINIMIZATION

The SM should select investigation methods that minimize the generation of IDW, particularly RCRA hazardous wastes. The SI team should limit contact with contaminants, and use drilling and decontamination methods (such as steam cleaning) that minimize PPE, DE, decontamination fluids, and soil cuttings. In particular, the inspection team should minimize the amounts of solvents used for decontamination or eliminate solvents. Minimizing the amount of wastes generated reduces the number of IDW handling problems and costs of disposal. The waste minimization approach should be addressed in the SI workplan.

4.3 TYPES, HAZARDS, AND QUANTITIES OF IDW

To handle IDW properly, the SM must determine the types (such as soil cuttings, ground water, decon fluids, PPE or DE), characteristics (whether RCRA hazardous or containing other CERCLA hazardous substances), and quantities of anticipated wastes. As discussed in Section 3.1, testing will generally not be required to characterize waste to the extent appropriate for an SI. In addition to direct observation of the IDW for evidence of contamination, the SM should review and analyze all available information about the site such as:

- Results of previous EPA preliminary assessments or site investigations.
- Environmental permits.
- Results of inspections by state, local, or federal agencies, or private parties.
- Records from community relations interviews.
- Any other helpful data such as tax records or aerial photography.

Upon ascertaining the types of anticipated IDW, the SM should determine IDW characteristics, in particular whether the anticipated waste is RCRA hazardous (see Section 3.2 of this guidance) or contains high concentrations of PCBs. For RCRA hazardous IDW, the SM should determine whether the IDW pose an increased hazard to human health and the environment relative to conditions that existed prior to the SI. Whenever field analytical screening instruments are used during the SI, the SM may plan to evaluate the analytical results as helpful indicators of IDW characteristics. However, the SM must remember that most of these tests are not RCRA tests, and that the test results usually do not identify RCRA hazardous wastes. The SM must also determine the exact properties of RCRA nonhazardous IDW to select an appropriate disposal facility (e.g., POTW) when the circumstances require off-site disposal.

Upon determining the types and characteristics of IDW to be generated, the SM must assess the anticipated quantities which vary depending on the size of a site and the scope of the SI. As a point of reference, a typical SI may result in generating a range of 1 to 3 drums of PPE and DE, 50 to 1,500 gallons of decontamination water, 1 to 3 pints of other decontamination fluids (e.g., organic solvents) and, depending on the number of wells installed or sampled, 0 to 13 drums of soil cuttings and 0 to 200 gallons of well purge water. The SM should calculate the quantity of the anticipated soil cuttings and ground water from the dimensions of wells and the depth to the ground water table. The SM should use experience to assess the amount of decontamination fluids (decontamination water and organics), PPE, and DE.

4.4 DECISION TREE

Upon designating IDW either RCRA hazardous or RCRA nonhazardous, the SM should determine the appropriate handling approach. The SM should use the decision tree (Figures 1, 2, and 3) which, combined with the SM's best professional judgment, will help select the best approach for IDW management and the steps that are involved in executing the approach. The decision tree indicates when and how IDW should be handled on-site or disposed off-site.

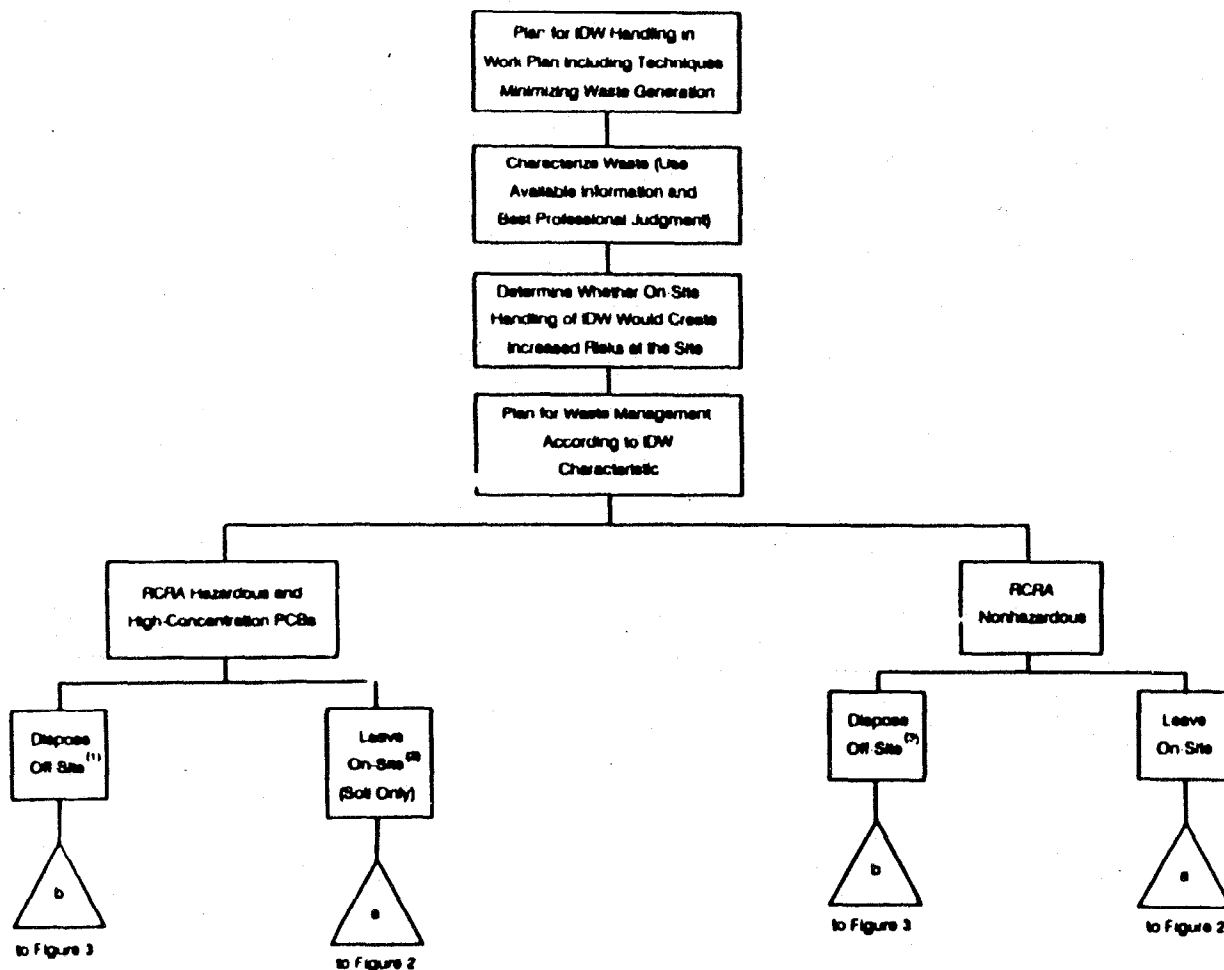
The decision tree summarizes basic elements of planning for IDW handling such as waste minimization, characterization, and management. It shows the steps that must be followed in the process. For example, the "Plan for Waste Management According to IDW Characteristic" branch (Figure 1) indicates that the SM has two options: either to handle IDW on-site or to dispose of it off-site. If the SM's decision is to leave IDW on-site, then the "On-Site Handling" branch (Figure 2) indicates what choices and steps can be involved in this approach depending on the type of IDW. The "Off-Site Disposal" branch (Figure 3) of the decision tree presents options available for handling IDW off-site and steps involved in executing these options. The SM should select one of the available options for a given type of IDW.

For example, when IDW from the same site are expected to encompass ground water, PPE, DE, decontamination fluids, and soil cuttings that are RCRA hazardous (or contaminated with PCBs) wastes, the decision tree (Figures 1, 2) calls for either handling the cuttings on-site in an AOC unit, or in the site's existing treatment or disposal unit (TDU), or disposing of them off-site. EPA prefers to handle most IDW on-site, but if circumstances require, the off-site option is also available. If PPE and DE can be decontaminated and, according to the SM's best professional judgment, rendered nonhazardous, the decision tree indicates (Figure 3) that these wastes should be double-bagged, and deposited either in an industrial dumpster (on-site or at the EPA warehouse), or in a municipal landfill (RCRA Subtitle D facility). If the SM anticipates that PPE and DE cannot be rendered RCRA nonhazardous after decontamination and the total quantity of IDW generated exceeds 100 kg at an individual site, the decision tree indicates (Figures 1,2) that the wastes should be drummed and disposed off-site at an appropriate facility by a subcontractor, and the SM should start the subcontracting process before field activity begins. If the total quantity of RCRA hazardous PPE and DE is less than 100 kg and this quantity represents the entire amount of IDW generated during the SI, the small quantity waste generator exemption applies and the wastes can be disposed of in a municipal landfill with state approval. However, EPA prefers to send even small quantities of RCRA hazardous PPE and DE to RCRA hazardous waste facilities.

The decision tree points out that when the ground water is RCRA nonhazardous (the most common situation), the water may be managed on-site (Figure 2) using one of a few simple techniques. If decontamination fluids are RCRA nonhazardous, they should be handled similarly. The decision tree indicates (Figure 3) that RCRA hazardous organic decontamination fluids should be handled off-site.

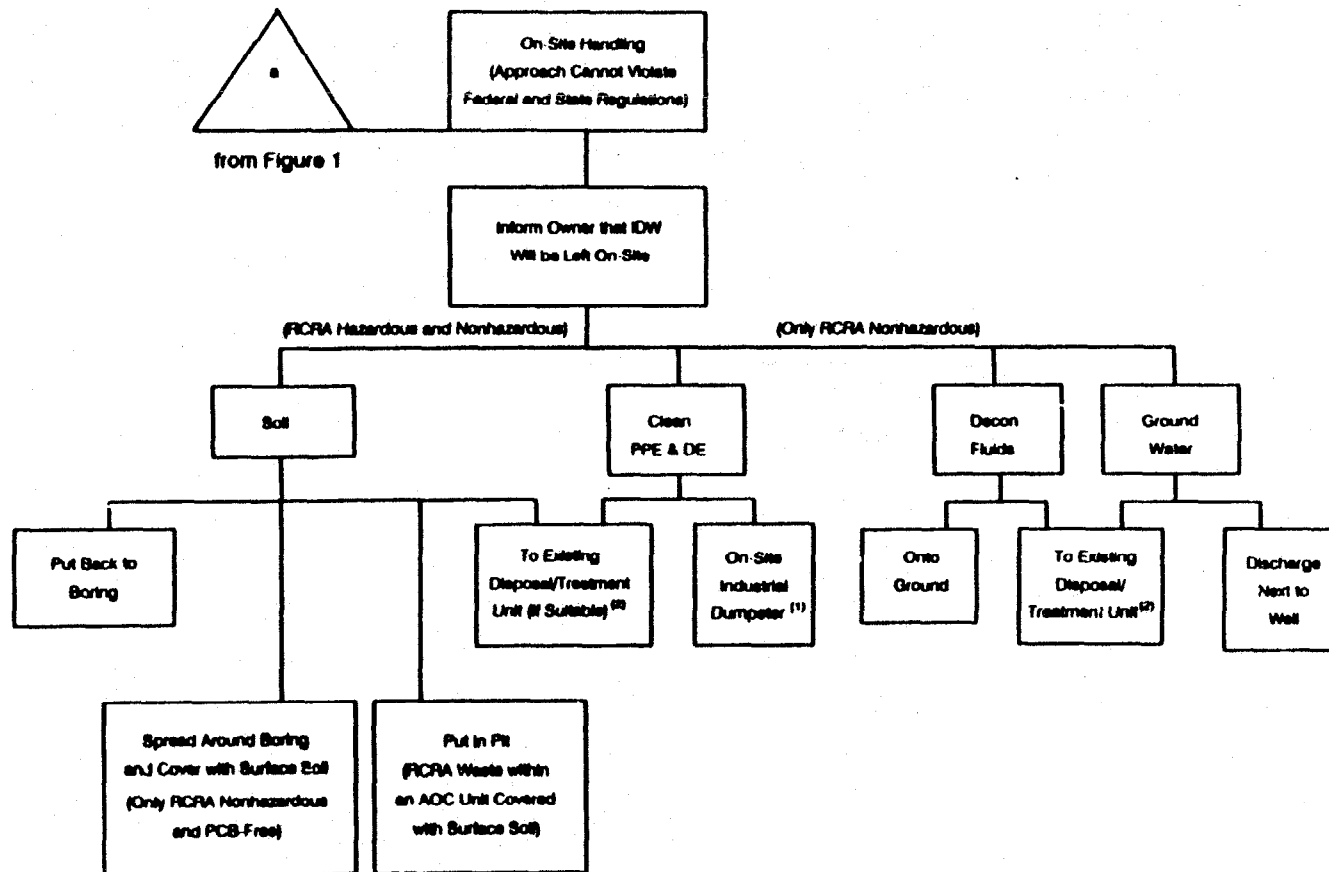
Sections 4.5 and 4.6 of this guidance present the details of EPA-preferred approaches to IDW management.

Figure 1
IDW Management Decision Tree



- (1) Soil cuttings, ground water, and decontamination fluids creating increased hazards at the site should be disposed off-site. Before and after the SI, determine anticipated waste quantity and applicable regulations for waste generators.
- (2) If not prohibited by other legally enforceable requirements such as state ARARs.
- (3) Justified only in rare circumstances when a RCRA nonhazardous waste is a state hazardous waste and state legally enforceable requirements call for waste removal, or if leaving the waste on-site would significantly affect human health and the environment.

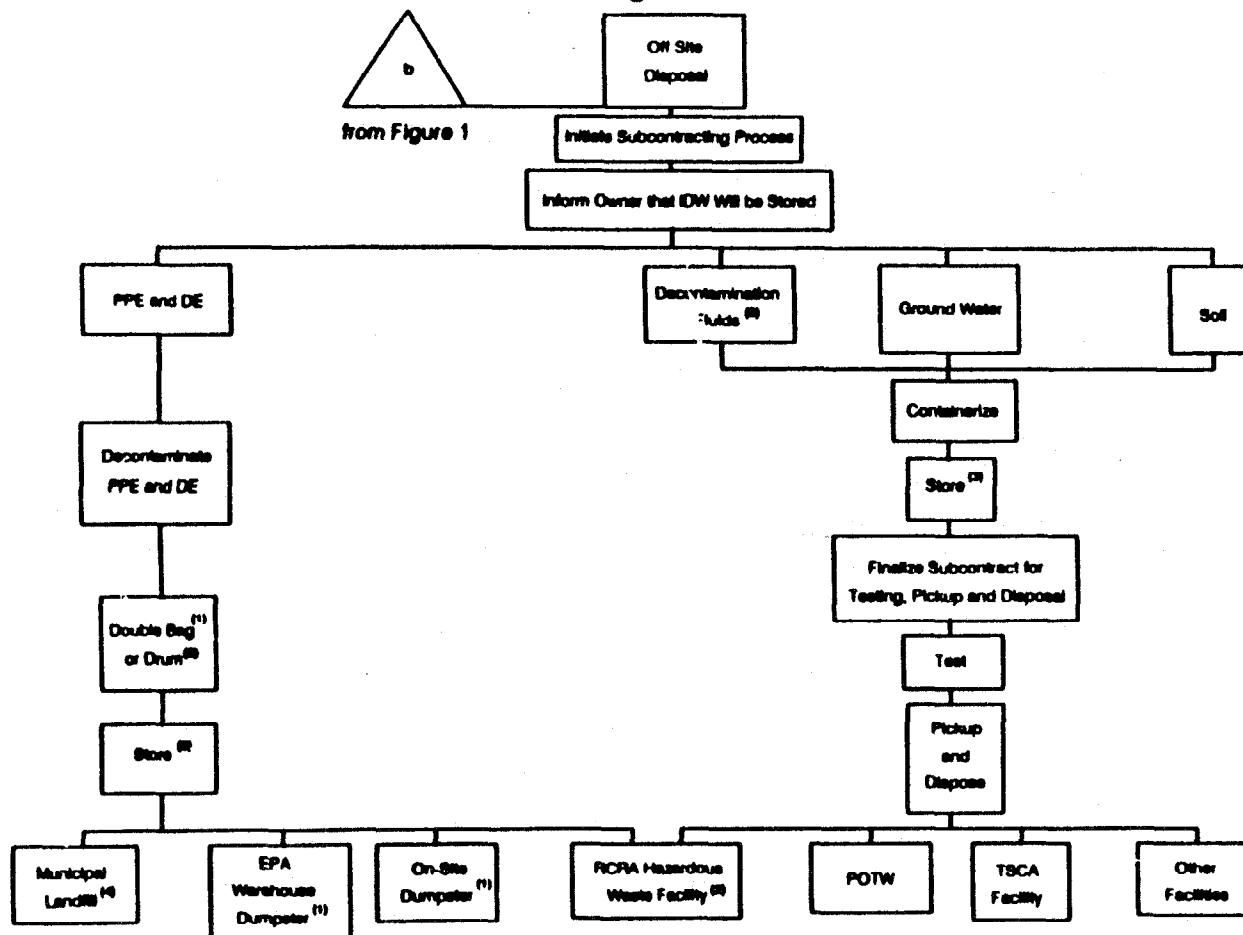
Figure 2
IDW Management Decision Tree



(1) Clean PPE and DE may also go to the nearest landfill or to an EPA warehouse dumpster.

(2) If the receiving unit meets the off-site policy acceptability criteria

Figure 3
IDW Management Decision Tree



(1) Only RCRA nonhazardous waste.

(2) Only RCRA hazardous waste generated in quantities greater than 100 kg/month when sent off-site.

(3) In accordance with accumulation requirements for RCRA hazardous wastes.

(4) Only if the conditionally exempt small quantity generator exception applies.

(5) If the conditionally exempt small quantity generator exception applies, off-site disposal of decon fluids may not require subcontracting

4.5 ON-SITE IDW HANDLING AND MANAGEMENT OPTIONS

If IDW are RCRA nonhazardous soil or water, they should be left on-site unless other circumstances, such as a state ARAR or a high probability of serious community concerns, require off-site disposal. RCRA hazardous soil also may be left on-site within an AOC unit. The SM must determine procedures for handling IDW on-site and notify the site owner in the site access agreement form that IDW such as soil cuttings and water will be left on-site. If the SM intends to leave IDW on-site, the waste should not be containerized and tested.

The on-site handling options available to the SM when IDW are RCRA nonhazardous are listed below.

- For soil cuttings:
 1. Spread around the well
 2. Put back to the boring
 3. Put into a pit within an AOC
 4. Dispose of at the site's operating TDU.
- For ground water:
 1. Pour onto ground next to the well to allow infiltration
 2. Dispose of at the site's TDU.
- For decontamination fluids:
 1. Pour onto ground (from containers) to allow infiltration
 2. Dispose of at the site's TDU.
- For decontaminated PPE and DE:
 1. Double bag and deposit in the site or EPA dumpster, or in any municipal landfill
 2. Dispose of at the site's TDU.

If IDW are considered RCRA nonhazardous due to lack of information on the waste hazard, the inspection team should have an alternative plan for handling IDW if field conditions indicate that these wastes are hazardous. In such a case, the minimum requirement is to have an adequate number of containers available for collecting ground water, decontamination water, or soil cuttings.

If IDW consist of RCRA hazardous soils that pose no immediate threat to human health and the environment, the SM should plan on leaving it on-site within a delineated AOC unit. However, before deciding to leave RCRA hazardous soil on-site, the SM must consider the proximity of residents and workers in the surrounding area. The SM must always use best professional judgment to make such decisions. Planning for leaving RCRA hazardous soil on-site involves:

- Delineating the AOC unit.
- Determining pit locations close to the borings within the AOC unit for waste burial.
- Covering hazardous IDW in the pits with surficial soil.
- Not containerizing and testing wastes designated to be left on-site.

Another alternative for handling RCRA hazardous soil is disposal in a TDU located on the same property as the AOC under investigation. If the TDU is outside the AOC, it must comply with the off-site policy. If any organic decon fluids are generated (which are RCRA hazardous wastes), they should be disposed of off-site in compliance with the off-site policy or in compliance with the conditionally exempt small quantity generator exemption. Small quantities (i.e., no more than 100 kg/month) of organic decon fluids may be containerized off-site prior to delivery to a hazardous waste facility.

4.6 OFF-SITE DISPOSAL OF IDW AND MANAGEMENT OPTIONS

IDW should be disposed off-site in the following situations:

- They are RCRA hazardous water.
- They are RCRA hazardous soil that may pose a substantial risk if left at the site.
- They are RCRA hazardous PPE and DE.
- If leaving them on-site would create increased risks at the site.

RCRA nonhazardous wastes could be disposed of off-site at appropriate RCRA nonhazardous facilities that are in compliance with CERCLA section 121(d)(3) and the off-site policy when it is necessary to comply with legally enforceable requirements such as state ARARs that preclude onsite disposal. IDW designated for off-site disposal must be properly containerized, tested, and stored before pick-up and disposal. Decontaminated PPE and DE should be double-bagged if sent to an off-site dumpster or a municipal landfill.

Planning for off-site disposal should include the following EPA guidelines:

- Incorporating a provision in the site access agreement form to inform the site owner that containerized IDW may be temporarily stored on-site while awaiting pickup for off-site disposal. The agreement should also request the owner's cooperation.
- Initiating the bidding process for IDW testing, pick-up, and disposal. If there are any subcontracting needs in planning for off-site disposal, EPA should specify what means of disposal will be needed (i.e. various types of treatment, landfilling, etc.). Since RCRA hazardous IDW must go to RCRA hazardous waste disposal facilities that comply with the off-site policy, the SM should obtain a list of available facilities from the RPO. Each EPA region maintains a list of RCRA hazardous TSD facilities that meet the conditions of the off-site policy. The recent addition of 25 new toxicity characteristic constituents to the list of toxic chemicals subject to RCRA hazardous waste regulations may result in fewer facilities available to handle IDW in the future. The SM must also check the selected facility's compliance before IDW pick-up. If IDW are RCRA nonhazardous, the SM must also check if the receiving RCRA nonhazardous waste facility complies with the off-site policy.
- Coordinating IDW generation with testing and pick-up. IDW samples should be collected in accordance with the "Test Methods for Evaluating Solid Waste" guidance manual (SW 846), and shipped for RCRA tests (and other tests, if necessary) as early as possible during the SI. This approach shortens the storage time and reduces the number of site visits to pick up waste. IDW need not be analyzed by a CLP laboratory. The SM should use the laboratory services of the pickup and disposal subcontractor, obtain an EPA ID number and manifest form for RCRA hazardous IDW, and a bill of lading for RCRA nonhazardous IDW.

- Preparing adequate numbers and types of containers. Drums should be used for collecting small amounts of IDW. Larger amounts of soil and water can be contained in Baker tanks, poly tanks, and bins. PPE and DE should be double-bagged for disposal at a municipal landfill or collected in drums for disposal at a hazardous waste facility.
- Designating a storage area (either within the site's existing storage facility, existing fenced area, or within a temporary fence constructed for the SI). No humans, children in particular, may have access to the storage area. If a temporary storage facility is to be constructed, its location and size must be agreed upon with the site owner, and all construction materials should be delivered to the site before or on the first day of the SI.

EPA expects that complying with this guidance will limit on-site storage to, at most, the time required to complete any testing (usually less than 6 weeks) required by subcontractors in order to arrange for transportation. In most cases, this will not result in exceeding the regulatory 90 day storage time for quantities greater than 1,000 kg/month regardless of the quantity of IDW. In cases where the regulatory 90 day storage time for quantities greater than 1,000 kg/month is exceeded, the SM must initiate a subcontract bidding process to remove IDW wastes off-site and a permit is not required.

All IDW shipped off-site, whether RCRA hazardous or not, must go to facilities that comply with the off-site policy, and the SM must check that subcontractors operate in accordance with this policy.

5.0 IMPLEMENTING THE IDW MANAGEMENT PLAN

The work plan describing the anticipated approach and procedures for IDW management should be clear, detailed, and concise to allow the field team to follow without problems. The plan should also be flexible enough to allow slight modifications due to unexpected and unforeseen field conditions. The SM should document implementation of the work plan in the field log book and describe the appearance of IDW as well as any modifications to the original handling approach. The SM must also ensure that IDW is handled in a fashion that does not generate public concerns.

5.1 ON-SITE IDW MANAGEMENT

If ground water or decontamination fluids are to be collected during the SI, adequate numbers and types of containers must be delivered to the site before the SI starts. The SM must check if the containers are clean and measure the pH of containerized waters even if these waters were originally determined to be RCRA nonhazardous. When the work plan calls for ground water to be poured onto the ground next to the well, then the SM must verify the original determination (e.g., pH testing) before allowing the water to infiltrate the ground.

If the SM, using best professional judgment, renders PPE and DE RCRA nonhazardous after decontamination, the materials are to be double-bagged and the SI team should take them to either the on-site or EPA warehouse dumpster, or to a municipal landfill. The location of PPE and DE disposal should be described in the field log book.

If the work plan calls for on-site management of RCRA hazardous soil cuttings, a shallow pit should be made close to the borings within a delineated AOC unit. IDW should then be buried in this pit and covered with surficial soil. The SM may decide to have more than one IDW burial pit within an AOC unit. The appearance of the generated IDW, and the size and location of the pit, must be described in the field log book.

If the work plan indicates that both RCRA hazardous and nonhazardous IDW are to be disposed in an operating treatment and disposal unit located on the same property as the IDW sources (but outside the AOC), then the SM must verify that the unit complies with the requirements of the off-site policy at the time of disposal.

5.2 OFF-SITE DISPOSAL OF IDW

Off-site disposal of RCRA hazardous and nonhazardous IDW involves the following common elements:

- Coordinating IDW handling.
- Identifying and verifying an acceptable disposal facility before the SI.
- Finalizing the subcontract.
- Containerizing IDW.
- Labeling containers.
- Storing containers.
- Sampling and testing of IDW.
- Transporting IDW off-site.

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- Disposing at a disposal facility.
- Documenting the process.

Coordination of IDW handling is important because it affects the schedule and costs of the SI. Most coordination must be done before field activity starts. Before starting the field work, a subcontractor should be selected so the SM can coordinate field work and IDW generation with the subcontractor's sampling, testing, pick-up, and disposal activities. Before containerizing IDW, the SM should check the containers to ensure they are clean and do not contain any residues from past use. All filled containers should be dated and labeled as either RCRA hazardous or RCRA nonhazardous and stored in a safe manner in compliance with relevant regulations. The SM should also obtain an EPA ID number for a RCRA hazardous waste from the RPO.

If a temporary storage facility must be constructed, the SM should have all construction materials, such as chain-link fencing, posts, and other needed materials, delivered to a location agreed upon with the site owner before the SI. The SM should ensure that the storage time is short and never exceeds the regulatory 90 days for RCRA hazardous waste even if the small quantity generator exemption applies.

The SM should check that the subcontractor collects IDW analytical samples for the disposal facility "profile analysis" using EPA-recommended methods described in "Test Methods for Evaluating Solid Waste Physical/Chemical Methods" - SW 846. One composite sample should be collected from each large container or from a group of drums. Small samples of soil cuttings or drilling mud should be taken from several locations and depths of the handling containers, homogenized in a decontaminated bucket, and placed in sampling jars. Sampling of PPE and DE should be avoided. The SM should also ensure that the chain-of-custody form for shipping IDW samples is used. When the subcontractor's analysis confirms that IDW is a RCRA restricted hazardous waste, the SM should check that the subcontractor:

- Treats the IDW to meet the treatment standards (if needed) before land disposal.
- Complies with the LDR notification requirements of 40 CFR Part 268.

Containerized and tested RCRA hazardous IDW must be accompanied by a Hazardous Waste Manifest (and other forms required by state laws) if hauled off-site. RCRA nonhazardous IDW should have a bill of lading if transported off-site. The SM must obtain all required forms, fill them out clearly and completely, and have the forms signed by the RPO. The SM, if authorized, may sign the forms on behalf of EPA. Before transporting IDW to the selected facility, the SM must verify the facility's compliance with the off-site policy at the time of disposal. If the facility's status has changed since the award of the contract, (due to receiving citations or fines), the SM is responsible for finding a replacement facility without delay. The SM must receive a copy of the IDW analytical results and a confirmation of disposal from the subcontractor.

6.0 IDW HANDLING COSTS AND SUBCONTRACTING

This section presents and compares the costs of both on-site and off-site IDW management with emphasis on the costs of off-site disposal. The costs presented here are for general reference.

The costs of off-site IDW disposal have been increasing for several years and this trend is expected to continue in the future. Off-site IDW handling involves the use of a subcontractor to haul and dispose IDW in an appropriate facility that complies with the off-site policy. Most wastes generated during the SI and designated for off-site disposal are liquids, either RCRA hazardous or nonhazardous, which go to either RCRA wastewater treatment plants or POTWs. Solid IDW usually go to land disposal facilities.

On-site IDW handling, the EPA-preferred approach, involves the use of a variety of simple techniques for leaving the IDW in existing waste areas. These techniques include pouring RCRA nonhazardous decontamination fluids and ground water onto the ground, and burying soil cuttings in a shallow pit in the investigation area.

6.1 ON-SITE IDW MANAGEMENT

On-site IDW handling generally incurs no costs and does not delay the SI. Drums may be needed for collecting water. However, these drums will be recovered and reused on other SIs, so the cost of purchasing drums, distributed over several SIs, is negligible. The cost of digging shallow pits can be covered under the drilling subcontract. Spreading soil cuttings around the boring, or pouring ground water onto the ground, incurs no costs.

6.2 OFF-SITE DISPOSAL OF IDW

Handling IDW off-site involves hiring a subcontractor to provide transportation, testing, and disposal services. This approach allows the waste generator to select the most technically advanced and economically suitable disposal facility that complies with regulations. However, off-site management has several disadvantages including: (1) increasing costs of the services; (2) loss of control over the fate of IDW while still being liable for the waste; (3) potential for accidental spills during transportation; (4) difficulty in finding a suitable disposal facility; and (5) the reluctance of states to accept out-of-state wastes for disposal.

The costs of off-site IDW handling consist of the following elements: (1) containerization; (2) testing; (3) transportation; and (4) disposal. The costs of containers (usually 55-gallon drums) used to collect waste is about \$50/drum. These containers may be purchased by either EPA or the subcontractor. The cost of containers purchased by subcontractors is usually higher, therefore, the SM may decide to purchase all necessary containers.

The cost of the "profile analysis," performed by the subcontractor to verify the waste hazard prior to transport is between \$40 and \$300/sample. The total cost of the analysis depends on the number of samples and the parameters analyzed. The cost of transportation varies depending on factors such as the distance between the site and the disposal facility, the number of drums (the price per drum is lower when more drums are transported), and whether the pickup service is set for an individual generator or for several waste generators which is less expensive. In 1990, the estimated price range for waste transportation (regardless of whether IDW are hazardous) was between \$35 to \$600/drum.

The costs of disposal depend on the waste hazard, matrix, and amount. The ranges of costs per drum are presented below:

- RCRA nonhazardous liquid: \$12.50 - 345/drum
- RCRA hazardous liquid: \$155 - 550/drum
- RCRA nonhazardous solid: \$66 - 135/drum
- RCRA hazardous solid: \$145 - 615/drum

Additional costs of handling IDW off-site include:

- Storage.
- Field trips (to assist in waste sampling and pickup).
- Procurement expenses.

If IDW on-site storage is not available before pickup, a chain-link fence can be built at an average cost of \$600 (\$300 for the materials and \$300 for labor). The cost of procurement is estimated at about \$300 per site. The cost of the field trips depends on the coordination of waste generation, testing, and pickup.

The site manager must select a subcontractor before field work is completed, so the subcontractor can collect IDW samples for the "profile analysis" while the SM is still on-site. This approach requires only one more field trip to assist in the waste pickup. If two additional trips are needed (one for collecting IDW samples and one for IDW pickup), the costs of IDW disposal increase significantly. For example, if there are two drums to dispose of, the transportation, testing, and disposal cost is \$700, and one field trip costs \$500, the total cost of IDW handling is \$1,200. An additional field trip would result in a total cost of \$1,700, a 42 percent increase.

The approximate cost ranges of managing one drum of IDW off-site, depending on the waste hazard, are presented below:

WASTE	CONTAINER (\$)	TEST (\$)	TRANSPORTATION (\$)	DISPOSAL (\$)	STORAGE PROCUREMENT AND FIELD TRIPS (\$)	TOTAL* (\$)
RCRA Hazardous Solid	50	20-150	35-600	145-615	233	500-1650
RCRA Non-Hazardous Solid	50	20-150	35-600	66-135	233	400-1200
RCRA Hazardous Liquid	50	20-150	35-600	155-550	233	500-1600
RCRA Non-Hazardous Liquid	50	20-150	35-600	12.50-345	233	350-1400

* Based on the following assumptions: (1) 6 drums/site, (2) 1 sample/2 drums and, (3) only one field trip required for waste pickup at a cost of \$500/6 drums (\$83/drum).

The role of the SM in coordinating field activities, the subcontracting process, and IDW management is crucial to reducing the costs of IDW management. Disposing IDW off-site always results in high costs regardless of the waste hazard because there is no significant difference between the costs of disposal of hazardous and nonhazardous wastes. The SM should apply the most efficient management techniques to lower the costs of IDW handling whenever possible, and when such practices do not threaten human health and the environment.

6.3 SUBCONTRACTING

To implement subcontracting services for off-site disposal of IDW, the SM should refer to Federal guidelines. These guidelines are available from the Federal Acquisition Regulations (FAR). Federal Superfund contractors generally follow these guidelines.

Names of these subcontractors are available from either a local telephone directory, a state environmental agency list (in some states), or from the Hazardous Materials Control Directory (published annually by the Hazardous Materials Control Research Institute). Waste management facilities of all prospective bidders must be in compliance with the off-site policy during the bidding process and when the IDW are transported and disposed of. The SM and EPA are responsible for verifying the subcontractor's facility compliance with the policy. If the selected facility's status changes before the date of transport and disposal, the subcontract should be immediately awarded to the next lowest bidder if this bidder is able to meet the regulatory storage time limits.

REFERENCES

1. 40 CFR Part 300, National Oil and Hazardous Substances Pollution Contingency Plan, Final Rule, 55 FR 8666-8865, March 8, 1990 (see Appendix A - Relevant Parts of the NCP).
2. 40 CFR Parts 240-280, Solid Waste Regulations, 1988.
3. 40 CFR Part 300.440, Amendment to the National Oil and Hazardous Substances Pollution Contingency Plan; Procedures for Planning and Implementing Off-Site Response Actions; Proposed Rule, 53 FR 48218-48234, November 29, 1988.
4. OSWER Directive 9834.11, November 13, 1987 - "EPA Off-Site Policy."
5. OSWER Directive 9347.3-05 FS, July 1989 - Superfund LDR Guide #5 (see Appendix B).
6. 40 CFR 761.60 - 761.79 - TSCA Regulations, 1988.
7. OSWER Directive 9330.2-4, April 15, 1986 - "Discharge of Wastewater from CERCLA Sites into POTWs" (see Appendix C).
8. "CERCLA Site Discharges to POTWs" - Guidance Manual (EPA/540/G-90/005, August 1990).
9. 40 CFR 403.5 CWA Regulations, 1988.
10. "CERCLA Compliance with Other Laws Manual" (Part I - EPA/540/G-89/006, Part II - EPA/540/G-89/009, 1989).
11. 40 CFR Part 261 et al., Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristics Revisions; Final Rule 1990 (see Appendix D - TCLP Constituents Table).

APPENDIX A
RELEVANT PARTS OF THE NCP

federal register

**Thursday
March 8, 1990**

Part II

Environmental Protection Agency

**40 CFR Part 300
National Oil and Hazardous Substances
Pollution Contingency Plan; Final Rule**



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300.420(c)(5) describes the information contained in a lead-agency report following completion of a remedial site investigation, including documentation as well as sampling data and potential risks to humans and the environment.

Response to comments: A commenter asked that the NCP state that reasonable efforts will be made during the site investigation phase to identify PRPs and provide them copies of the preliminary assessment/site investigation (PA/SI) report and an opportunity to comment.

The removal and remedial processes as currently outlined in the NCP provide PRPs with a reasonable opportunity to review and comment on lead agency actions at a site when the proposed plan is made available. Before this time, documents placed in the administrative record, including the PA/SI, are available for public inspection. In addition, PRPs that are interested in more extensive involvement in the investigation process may agree to undertake removal or remedial actions through a settlement agreement with EPA. They may be granted substantially more site involvement than non-settling PRPs.

Extending the formal review and comment period to PRPs as far back in the removal and remedial process as the PA/SI stage would unnecessarily slow down preliminary fact-gathering at a site. In cases where removal actions are considered emergency or time-critical, such review and comment time would unjustifiably delay response to a dangerous situation. Also, in most cases, the PRP search has not been completed or even started in a comprehensive manner at the time of the PA/SI. Accordingly, specifying formal procedures for PRP involvement at that time is not practical.

Final rule: EPA is promulgating §§ 300.410(c)(2) and 300.420(c)(5) as proposed.

Name: Section 300.410(g). Notification of natural resource trustees.

Final rule: Section 300.410(g) is revised as follows (see preamble discussion on § 300.615):

If natural resources are or may be injured by the release, the OSC or lead agency shall ensure that state and federal trustees of the affected natural resources are promptly notified in order that the trustees may initiate appropriate actions, including those identified in subpart C of this part. The OSC or lead agency shall seek to coordinate necessary assessments, evaluations, investigations, and planning with such state and federal trustees.

Name: Sections 300.415(b)(4) and 300.420(c)(4). Sampling and analysis plans.

Proposed rule: Proposed § 300.415 did not describe sampling requirements. Proposed § 300.420(c)(4) described the procedures necessary for preparing a site-specific sampling plan for a remedial site inspection.

Response to comments: One commenter stated that EPA should revise § 300.420(c)(4) to specify review of the sampling plan to ensure that appropriate sampling and quality control procedures are followed. In response, EPA is revising the description of the site-specific sampling plan in proposed § 300.420(c)(4) to conform with the purpose of the quality assurance project plan (QAPP) defined in § 300.5 and the QAPP and sampling and analysis plan described in § 300.430(b)(8), which states that such plans will be approved by EPA. This change emphasizes the similarity of these activities in the site evaluation and remedial investigation parts of the program. In addition, EPA believes that, when samples will be taken, it is appropriate to describe sampling requirements for non-time-critical removal actions to ensure that data of sufficient quality and quantity will be collected for this type of action.

EPA also notes that portions of the QAPP may incorporate by reference non-site-specific standardized portions of already-approved QAPPs, especially those portions addressing policy and organization, or describing general functional activities to be conducted at a site to ensure adequate data. This eliminates the necessity to reproduce non-site-specific quality assurance procedures for every site.

Final rule: Proposed §§ 300.415(b)(4) and 300.420(c)(4) are revised as follows:

1. In § 300.415(b)(4), a requirement has been added for developing a sampling and analysis plan, when samples will be taken.

2. Section 300.420(c)(4) is revised to better describe the required contents of the sampling and analysis plan.

Section 300.415. Removal Action.

Name: Section 300.415(b)(5)(ii).

Removal action statutory exemption.

Proposed rule: CERCLA section 104(c)(1)(C) provides a new exemption to the statutory limits on Fund-financed removal actions of \$2 million and 12 months. This exemption, stated in the NCP in § 300.415(b)(5)(ii), is applicable when continued response is otherwise appropriate and consistent with the remedial action to be taken. EPA expects to use the exemption primarily for proposed and final NPL sites, and only rarely for non-NPL sites (see 53 FR 51409).

Response to comments: One commenter supported EPA's proposal to allow waiver of the limits on Fund-financed removal payments if such an exemption is consistent with remedial actions.

One commenter stated that the decision to engage in a removal action should be based on site conditions and their impact on health and the environment, not cost or time; that once EPA concludes that a removal action is appropriate, the various alternatives should be analyzed at both likely NPL and non-NPL sites equally. The commenter felt that EPA should use the consistency exemption more liberally where time, rather than money, was the complicating factor.

In response, Congress has made the determination that cost and time are relevant factors in deciding how extensive a Fund-financed removal action may be; thus, contrary to the commenter's remark, EPA will continue to consider such factors. Further, Congress did not differentiate between time and dollar limits in setting the exemptions; EPA notes that exceeding the time limit will often also increase the cost of a removal action, even though it does not necessarily raise the cost to over \$2 million. Thus, EPA does not believe it should set different criteria for their use.

The new exemption from the time and dollar limits applies to any Fund-financed removal and thus encompasses state-lead as well as EPA-lead responses. Actions where EPA has the lead, but is to be reimbursed by private parties or other federal agencies, are still subject to the statutory limits and provisions for exemption.

Because the exemption requires consistency with the remedial action to be taken, its use is well suited to proposed or final NPL sites where remedial action is likely to be taken. It may also be appropriate to use this exemption at some non-NPL sites where justified on a case-by-case basis.

Final rule: EPA is promulgating the rule as proposed.

Name: Section 300.415(i). Removal action compliance with other laws.

Existing rule: The current NCP in § 300.65(f) requires that Fund-financed removal actions and removal actions pursuant to CERCLA section 106 attain or exceed, to the greatest extent practicable considering the exigencies of the circumstances, applicable or relevant and appropriate federal public health and environmental requirements. Other federal criteria, advisories, and guidance and state standards are to be

considered, as appropriate, in formulating a removal action.

Proposed rule: Proposed § 300.415(j) (renumbered as 300.415(i) in the final rule) required that removal actions attain, to the extent practicable considering the exigencies of the situation, all state as well as federal applicable or relevant and appropriate requirements (ARARs).^{*} Other federal and state criteria, advisories, and guidance shall, as appropriate, be considered in formulating the removal action. The proposed revisions also note that statutory waivers from attaining ARARs may be used for removal actions. In addition, the preamble to the proposed revisions provided guidance clarifying three factors to be considered in determining the "practicability" of complying with ARARs: The exigencies of the situation, the scope of the removal action to be taken, and the effect of ARAR attainment on the removal statutory limits for duration and cost (53 FR 51410-11).

Response to comments: Several commenters supported the proposed revision to the NCP requiring that both federal and state ARARs be complied with when conducting removal actions. One commenter asked what documentation is required to show that ARARs have been identified and requested that EPA develop guidance providing hypothetical conditions describing the extent to which ARAR analysis should be performed. Another commenter stated that non-Fund-financed removal actions conducted at federal facilities also should be required to comply with ARARs.

In opposition to the proposal, a number of commenters pointed out that Congress did not intend that removal actions be required to comply with ARARs. The commenters suggested that, based on the legislative history, Congress intended that only remedial actions be subject to compliance with ARARs. According to one commenter, the legislative history states that ARARs do not apply during removal actions because removal actions are short-term, relatively low-cost activities of great urgency that should be free of the delays that may arise if it is necessary to identify and attain ARARs.

Other commenters suggested that attainment of ARARs should not be required during removal actions because removal actions are not intended to completely clean up a site, but rather to quickly eliminate or control an

immediate threat. The commenters argued that compliance with ARARs is based on what remains on site after an entire remedy is completed, not after a particular problem is controlled. In addition, several commenters argued that the main purpose of the removal program is quick mitigation of threats, and that requiring ARARs to be complied with during removal actions undermines this purpose by slowing down the cleanup process. The commenters suggested that such procedural delays as identification of ARARs will hinder the removal program's ability to respond to emergencies swiftly.

Several additional commenters suggested that requiring attainment of ARARs discourages PRPs from undertaking removal actions. Fund-financed removals can use the statutory limits to limit attainment of ARARs; those limits do not apply to PRP actions.

One commenter opposed the provision that requires OSCs to justify why they are not attaining ARARs during a specific removal action. The commenter argued that the prospect of an OSC being required to justify why he or she is not attaining all ARARs is inconsistent with removal program objectives.

Other commenters believed that the current policy concerning compliance with ARARs during removal actions should be replaced with a more discretionary policy. They suggested that OSCs should only be required to comply with ARARs that are most crucial to the proper stabilization of the site and protection of public health and the environment.

In response, EPA has carefully reviewed this issue in light of the public comments, and believes a number of clarifying points need to be made. First, as a threshold matter, EPA agrees that Congress did not, in the 1980 amendments to CERCLA, "require" EPA to meet ARARs during removal actions. However, it has been EPA's policy since 1985, established in the NCP, to attain ARARs during removals to the extent practicable, considering the exigencies of the situation. EPA believes that this is still a sound policy. Reference to requirements under other laws (i.e., ARARs) help to guide EPA in determining the appropriate manner in which to take a removal action at many sites.

If, for example, a component of the removal action is to discharge treated waste to a nearby river or stream, effluent limitations based on federal or state water quality criteria will be useful in determining the extent of such treatment. Today's policy is consistent

with section 105 of CERCLA which directs that the NCP include methods and criteria for determining the appropriate extent of removals. Thus, EPA is maintaining the policy described in the preamble to the proposed NCP, although EPA has modified the factors to be considered in determining practicability.

A number of other comments questioned the extent to which removals should attempt to attain ARARs. In responding to such comments, it is important to note that the policy that removals comply with ARARs to the extent practicable is defined in large part by the purpose of removal actions.

The purpose of removal actions generally is to respond to a release or threat of release of hazardous substances, pollutants, or contaminants so as to prevent, minimize, or mitigate harm to human health and the environment. Although all removals must be protective of human health and the environment within their defined objectives, removals are distinct from remedial actions in that they may mitigate or stabilize the threat rather than comprehensively address all threats at a site. Consequently, removal actions cannot be expected to attain all ARARs. Remedial actions, in contrast, must comply with all ARARs (or invoke a waiver). Indeed, the imposition by Congress of limits on the amount of time and Fund money that may be spent conducting a removal action often precludes comprehensive remedies by removal actions alone. Removal authority is mainly used to respond to emergency and time-critical situations where long deliberation prior to response is not feasible. All of these factors—limits on funding, planning time, and duration, as well as the more narrow purpose of removal actions—combine to circumscribe the practicability of compliance with ARARs during individual removal actions. Indeed, the vast majority of removals involve activities where consideration of ARARs is not even necessary, e.g., off-site disposal, provision of alternate water supply, and construction of fences, dikes and trenches.

Further, it should be noted that requirements are ARARs only when they pertain to the specific action being conducted. If, for example, a site has leaking drums, widespread soil contamination, and significant groundwater contamination, the removal action at the site might only involve actions necessary to reduce the near-term threats, such as direct contact and further deterioration of the ground

^{*} Note that proposed § 300.415(e) has been deleted (see preamble section above on "Listing sites in CERCLIS," and the remaining sections in § 300.415 have been renumbered.

water; thus, the removal action might be limited to removal of the drums and surface debris and excavation of highly contaminated soil. Requirements pertaining to the cleanup of ground-water contamination would not be ARARs for that action because the removal action is not intended to address ground water; rather, requirements pertaining to the drums, surface debris, or contaminated soil may be ARARs for the specific removal action. Once the lead agency makes the determination that the requirements are ARARs for a removal, then it must determine whether compliance is practicable.

It will generally be practicable for removal actions to comply with ARARs that are consistent with the goals and focus of the removal. However, as stated above, removals are intended to be responses to near-term threats, with the ability to respond quickly when necessary; thus, ARARs that would delay rapid response when it is necessary, or cause the response to exceed removal goals, may be determined to be impracticable. Of course, even where compliance with specific ARARs is not deemed practicable, the lead agency for a removal must use its best judgment to ensure that the action taken is protective of human health and the environment within the defined objectives of the removal action.

In order to better explain how a lead agency can determine when compliance with an ARAR is practicable, the preamble to the proposed NCP included three factors for consideration: Exigencies of the situation, scope of the removal action and the statutory limits (53 FR 51410-11). Upon consideration of comments, EPA has decided to enumerate in the rule only two of those three factors as important for determining practicability: Urgency (simply renaming exigencies) of the situation, and scope of the removal action. EPA believes that statutory limits, because they relate to the authority to conduct removal actions, are easier to consider within, rather than apart from, the factor of scope of the removal action when determining whether compliance with an ARAR is practicable.

The factor of urgency of the situation relates to the need for a prompt response. In many cases, appropriate response activities must be identified and implemented quickly in order to ensure the protection of human health and the environment. For example, if leaking drums pose a danger of fire or explosion in a residential area, the

drums must be addressed immediately, and it will generally be impracticable to identify and comply with all potential ARARs.

The second factor, the scope of the removal action relates to the special nature of removals in that they may be used to minimize and mitigate potential harm rather than totally eliminate it. Removals are further limited in the amount of time and Fund money that may be expended at any particular site in the absence of a statutory exemption. Again, using the example above, even though standards requiring cleanup of the lower level soil contamination would be an ARAR to that medium, they would be outside the scope of the removal action when such cleanup is not necessary for the stabilization of the site, or when it would cause an exceedance of the statutory limits and no exemption applied. Hence, such soil standards, while ARARs, would not be practicable to attain considering the exigencies of the situation. Of course, such standards may be ARARs for any remedial action that is subsequently taken at the site.

EPA disagrees with the comment that requiring PRPs to comply with ARARs to the extent practicable discourages PRPs from conducting removals because the statutory limits do not apply to non-Fund-financed actions. Although the limits apply by law to Fund-financed actions only, EPA has the discretion under CERCLA section 104(c)(1) to take removal actions that exceed those limits, in emergency situations or where the action is otherwise appropriate and consistent with the remedial action that may be taken at the site. EPA will select the appropriate remedy, even where an extensive removal action is warranted, regardless of whether the site is Fund-lead or PRP-based. The only difference is that if the site is Fund-lead, an exemption must first be invoked in order to proceed with the action. Thus, the time and dollar limitations generally will not result in PRPs performing a more extensive removal than EPA itself would conduct. That is, EPA's selection of a removal action, including what ARARs will be attained, will not be based on who will be conducting the removal.

Finally, as stated in the preamble to the proposed NCP (53 FR 51411), even if attainment of an ARAR is practicable under the factors described above, the lead agency may also consider whether one of the statutory waivers from compliance with ARARs is available for a removal action. EPA is developing guidance on the process of complying with ARARs during removal actions. EPA generally will only require

documentation of ARARs for which compliance is determined to be practicable, in order not to burden OSCs with substantial paperwork requirements.

Final rule: Proposed § 300.415(j) (renumbered as final § 300.415(i)) is revised as follows:

1. The following has been added to identify factors that are appropriate for consideration in determining the practicability of complying with ARARs:

In determining whether compliance with ARARs is practicable, the lead agency may consider appropriate factors, including the following:

(1) The urgency of the situation; and
(2) The scope of the removal action to be conducted.

2. The reference to advisories, criteria or guidance has been modified (see preamble section below on TBCs).

3. The description of ARARs has been reworded (see preamble section below on the definition of "applicable.")

Name: Sections 300.5, 300.415(g) and (h), 300.500(a), 300.505 and 300.525(a). State involvement in removal actions.

Existing rule: Sections 300.61 and 300.62 of the current NCP encourage states to undertake actions authorized under subpart F. Such actions include removal and remedial actions pursuant to CERCLA section 104(a)(1). The regulation notes further that CERCLA section 104(d)(1) authorizes the federal government to enter into contracts or cooperative agreements with the state to take Fund-financed response actions authorized under CERCLA, when the federal government determines that the state has the capability to undertake such actions.

Proposed rule: Proposed § 300.415(h) and (i) (renumbered as final § 300.415(g) and (h)) and § 300.525(a) would codify EPA's existing policy of entering into cooperative agreements with states to undertake Fund-financed removal actions, provided that states follow all the provisions of the NCP removal authorities. The preamble to the proposed rule suggested that non-time-critical actions are the most likely candidates for state-lead removals (53 FR 51410). Proposed § 300.510(b) provided further that facilities operated by a state or political subdivision require a minimum cost share of 50 percent of the total response costs if a remedial action is taken. Section 300.505 describes what EPA and a state may agree to in a Superfund Memorandum of Agreement (SMOA) regarding the nature and extent of interaction on EPA-lead and state-lead response. The preamble clarified that, where practicable, a SMOA may include general provisions

responses and responses conducted by PRPs (emergency and time-critical removals are not covered by this policy). This notification should specify the type and quantity of waste involved, the name and location of the receiving facility and the expected schedule for the transfer of the CERCLA waste. Such notification will enable the recipient state to obtain from its permitted facilities any other information it may need in order to support the out-of-state action. Although this notification is neither mandated by CERCLA nor required by this regulation, EPA believes that adherence to this procedure will help to ensure that these waste transfers occur in a safe and expedient manner. The policy is explained in more detail in OSWER Directive No. 9330.2-07 (September 14, 1989).

Because CERCLA actions may be carried out under a number of mechanisms and by a number of parties (e.g., lead state agencies, other federal agencies, PRPs), EPA plans to issue additional guidance or regulations, if appropriate, to implement this notification policy.

Final rule: There is no rule language on this issue.

Applicable or Relevant and Appropriate Requirements

Introduction. The November 20, 1985 revisions to the NCP required that, for all remedial actions, the selected remedy must attain or exceed the federal applicable or relevant and appropriate requirements (ARARs) in environmental and public health laws. It also required removal actions to attain ARARs to the greatest extent practicable, considering the exigencies of the circumstances. The preamble to the 1985 revisions to the NCP stated that ARARs could be determined only on a site-by-site basis, and it included from EPA's October 2, 1985 Compliance Policy a list of potentially applicable or relevant and appropriate requirements. The preamble also provided a list of federal non-promulgated criteria, advisories and guidance, and state standards "to be considered," called TBCs. EPA also provided five limited circumstances in which ARARs could be waived.

On October 17, 1988, CERCLA was reauthorized with additional new requirements. Section 121 of CERCLA requires that, for any hazardous substance that will remain on-site, remedial actions must attain requirements under federal environmental or state environmental or facility siting laws that are applicable or

relevant and appropriate under the circumstances of the release or threatened release at the completion of the remedial action. The statute also retained most of the waivers, with a few additions.

Although section 121(d)(2) basically codified EPA's 1985 policy regarding compliance with other laws, the section also requires that state standards are also potential ARARs for CERCLA remedial actions when they are promulgated, more stringent than federal standards, and identified by the state in a timely manner.

Furthermore, the CERCLA amendments provide that federal water quality criteria established under the Clean Water Act (CWA) and maximum contaminant level goals (MCLGs) established under the Safe Drinking Water Act, must be attained when they are relevant and appropriate under the circumstances of the release.

Today's revision to the NCP continues the basic concept of compliance with ARARs for any remedy selected (unless a waiver is justified). ARARs will be determined based upon an analysis of which requirements are applicable or relevant and appropriate to the distinctive set of circumstances and actions contemplated at a specific site. Unlike the 1985 revisions to the NCP, where alternatives were developed based on their relative attainment of ARARs, in today's rule recognition is given to the fact that ARARs may differ depending on the specific actions and objectives of each alternative being considered (for more discussion of this point, see preamble of proposal at 53 FR 51438, section 9).

In today's rule, EPA retains its policy established in the 1985 NCP of requiring attainment of ARARs during the implementation of the remedial action (where an ARAR is pertinent to the action itself), as well as at the completion of the action, and when carrying out removal actions "to the extent practicable considering the exigencies of the situation."

For ease of identification, EPA divides ARARs into three categories: chemical-specific, location-specific, and action-specific, depending on whether the requirement is triggered by the presence or emission of a chemical, by a vulnerable or protected location, or by a particular action. (More discussion of these types can be found in the preamble of the proposal at 53 FR 51437, section 6).

Response to comments: EPA received a few comments on general ARARs policies. One commenter argued that the remedial action should not necessarily

have to attain the most stringent applicable or relevant and appropriate requirement if a less stringent requirement provides adequate protection of human health and the environment.

EPA disagrees. CERCLA requires that remedial actions comply with all requirements that are applicable or relevant and appropriate. Therefore, a remedial action has to comply with the most stringent requirement that is ARAR to ensure that all ARARs are attained. In addition, CERCLA requires that the remedies selected be protective of human health and the environment and attain ARARs. A requirement does not have to be determined to be necessary to be protective in order to be an ARAR. Conversely, the degree of stringency of a requirement is not relevant to the determination of whether it is an ARAR at a site and must be attained (except for state ARARs).

Another commenter asked for confirmation that variance or exemption provisions in a regulation can be potential ARARs as well as the basic standards. EPA agrees that meeting the conditions and requirements associated with a variance or exemption provision can be a means of compliance with an ARAR. For example, EPA expects that CERCLA sites will frequently be complying with the terms of the treatability variance under the RCRA land disposal restrictions (LDR) for soil and debris when LDR is an ARAR.

Limitations in a regulation, such as the quantity limitations that define small quantity generators under RCRA and affect what requirements a generator must comply with, will also affect what requirements are applicable at a CERCLA site. However, it is possible that a requirement could be relevant and appropriate even though the requirement is not applicable because of a limitation in the regulation.

Indian tribe commenters contended that ARARs should not be defined as promulgated laws, regulations, or requirements because some Indian tribe laws, which could apply to a Superfund cleanup, may not be promulgated in the same fashion as state or federal laws. CERCLA section 126 directs EPA to afford Indian tribes substantially the same treatment as states for certain specified subsections of CERCLA sections 103, 104 and 105; EPA believes, as a matter of policy, that it is similarly appropriate to treat Indian tribes as states for the purpose of identifying ARARs under section 121(d)(2). EPA realizes that tribal methods for promulgating laws may vary, so any evaluation of tribal ARARs will have to

be made on a case-by-case basis. Tribal requirements, however, are still subject to the same eligibility criteria as states, as described in § 300.400(g)(4).

Another commenter disagreed with EPA's position that environmental laws do not apply to a CERCLA response action unless incorporated by CERCLA section 121(d). This commenter argued that EPA has confused the ARARs concept with one of preemption of state law.

In response, SARA established a process, in CERCLA sections 121(d)(2) and (d)(4), for how federal and state environmental laws should apply to on-site CERCLA remedial actions, i.e., the ARARs process. Based on these provisions, CERCLA remedies will incorporate (or waive) state standards, as appropriate under CERCLA. Thus, although other environmental laws do not independently apply to CERCLA response actions, the substantive requirements of such laws will be applied to such actions, consistent with section 121(d) and NCP § 300.400(g).

EPA's interpretation that CERCLA response actions are required to meet state (and other federal) environmental law standards only to the limited degree set out in CERCLA is also necessary to comply with the special mandates in CERCLA to respond quickly to emergencies, and to perform Fund-balancing. The position that on-site CERCLA response actions are not independently subject to other federal or state environmental laws is a long-standing one, based on a theory of implied repeal or pre-emption. See, e.g., 50 FR 47912, 47917-18 (Nov. 20, 1985); 50 FR 5862, 5865 (Feb. 12, 1985); "CERCLA Compliance With Other Environmental Laws" Opinion Memorandum, Francis S. Blake, General Counsel, to Lee M. Thomas, Administrator, Nov. 22, 1985.

Following are summaries of major comments and EPA's responses on specific sections of the ARARs policy.

Name: Sections 300.5 and 300.400(g)(1). Definition of "applicable."

Proposed rule: "Applicable requirements" means those cleanup standards, standards of control, or other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. The preamble to the proposed rule pointed out that there is generally little discretion in determining whether the circumstances at a site match those specified in a requirement (53 FR 51435-37).

Response to comments: One commenter suggested that language used in § 300.400(g)(4) of the proposed NCP which provides that "only those state standards that are promulgated and more stringent than federal requirements may be applicable or relevant and appropriate" be added to the definition of ARARs found in § 300.5.

In response, EPA notes that the definition it proposed already includes the condition that standards, whether federal or state, must be promulgated in order to be potential ARARs. EPA accepts this comment on stringency and has revised both §§ 300.5 and 300.400(g) to specify that in order to be considered ARARs, state requirements must be more stringent than federal requirements. EPA notes that, in general, state regulations under federally authorized programs are considered federal requirements.

A commenter supported the discussion of ARARs in the preamble to the proposed NCP, but remarked that the definitions of ARARs do not adequately reflect many of the important aspects mentioned in the preamble. EPA believes that the definitions stated in the rule are sufficiently comprehensive and that the information contained in the preamble to the proposed and final rules will help the public in applying the definitions.

One commenter asked why EPA had deleted rule language that applicable requirements are those requirements that would be legally applicable if the response action were not undertaken pursuant to CERCLA. In working with this definition, EPA found the previous definition confusing because it was stated in the conditional, i.e., requirements that would apply if the action were not under CERCLA. EPA revised the definition to explain more specifically what it means by applicable requirements to avoid any confusion. However, the 1985 wording is still a correct statement of the applicability concept. EPA is modifying the definition, however, to make it clear that the standards, etc. do not have to be promulgated specifically to address CERCLA sites.

Final rule: The proposed definition of "applicable" in §§ 300.5 and 300.400(g)(1) are revised as follows:

1. Consistent with the language in CERCLA section 121(d)(2), the description of federal and state laws in § 300.5 is revised to read:

"... requirements, criteria or limitations promulgated under federal environmental or state environmental or facility siting law"

[Comparable changes are made in

§§ 300.415(i), 300.430(e)(2)(i)(A), 300.430(e)(9)(iii)(B) and 300.430(f)(1)(ii)(C).]

2. The following sentence is added to § 300.5: "Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable."

3. In §§ 300.5 and 300.400(g)(1), the word "found" is added before "at a CERCLA site."

Name: Sections 300.5 and 300.400(g)(2). Definition of "relevant and appropriate."

Proposed rule: "Relevant and appropriate requirements" means those cleanup standards, standards of control and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site.

Section 300.400(g)(2) identified criteria that must be considered, where pertinent, to determine whether a requirement addresses problems or situations that are sufficiently similar to the circumstances of the release or remedial action that it is relevant and appropriate. The preamble to the proposed rule emphasized that a requirement must be both relevant and appropriate; this determination is based on best professional judgment. Also, the preamble stated that with respect to some statutes or regulations, only some of the requirements may be relevant and appropriate to a particular site, while others may not be (53 FR 51436-37).

Response to comments: 1. *General.* Several commenters expressed support in general for the revised definition of relevant and appropriate requirements and for the approach described in the proposal to identifying such requirements. Commenters in particular supported statements that a requirement must be both relevant, in that the problem addressed by a requirement is similar to that at the site, and appropriate, or well-suited to the circumstances of the release and the site, to be considered a relevant and appropriate requirement.

A few commenters recommended changes to the definition of relevant and appropriate requirements. One commenter suggested adding to the proposed definition that a relevant and appropriate requirement must be

"generally pertinent," a phrase used in the preamble of the proposed NCP in discussing the analysis of the relevance of a requirement, while another suggested adding "pertinent" to the circumstances of the site, expressing concern that "generally pertinent" was overly broad. EPA believes that the concept of "pertinence" is adequately considered as part of the evaluation of what is relevant and appropriate (see discussion of factors for determining relevant and appropriate requirements, below). EPA does not believe that the suggested changes should be made in the definition itself.

Another commenter suggested revising the definition to emphasize the jurisdictional prerequisites of a potentially relevant and appropriate requirement, recommending that a relevant and appropriate requirement be defined as one that, "while not applicable, sufficiently satisfies the jurisdictional prerequisites for legal enforceability." EPA disagrees, because the jurisdictional prerequisites, while key in the applicability determination, are not the basis for relevance and appropriateness. Rather, the evaluation focuses on the purpose of the requirement, the physical characteristics of the site and the waste, and other environmentally- or technically-related factors.

Another commenter objected to the policy that some portions of a regulation could be found relevant and appropriate, while other portions would not be. The commenter believed that this policy would lead to confusion and inconsistency, although the commenter agreed that the application of this policy to RCRA closure requirements, described in the proposal, was useful. EPA believes that this policy is appropriate and reflects its experience in evaluating RCRA closure requirements and other requirements as relevant and appropriate. Finding some parts of a regulation relevant and appropriate, and others not, allows EPA to draw on those standards that contribute to and are suited for the remedy and the site, even though all components of a regulation are not appropriate.

This approach has been particularly valuable as applied to RCRA closure, where the two applicable regulations, clean closure and landfill closure, address only the two poles of a potential continuum of closure responses. When RCRA closure is relevant and appropriate, Superfund may use a combination of these two regulations, known as hybrid closure, to fashion an appropriate remedy for a site that is

protective of both ground water and direct contact (for more discussion of hybrid closure, see preamble to the proposed NCP at 53 FR 51446).

2. *Factors for determining relevant and appropriate requirements.* One commenter suggested referencing the criteria described in § 300.400(g)(2) in the definition. EPA believes this is not appropriate because it could lead to confusion about the role of the criteria and result in greater emphasis on rigidly applying the criteria than is warranted.

Based on this latter comment and others about specific criteria in the proposal, EPA wants to clarify the role of the factors. (Note that the rule now refers to "factors" rather than "criteria.") EPA intends that the factors in § 300.400(g)(2) should be considered in identifying relevant and appropriate requirements, but does not want to imply that the requirement and site situation must be similar with respect to each factor for a requirement to be relevant and appropriate. At the same time, similarity on one factor alone is not necessarily sufficient to make a requirement relevant and appropriate. Rather, the importance of a particular factor depends on the nature of the requirement and the site or problem being addressed and will vary from site to site. While the factors are useful in identifying relevant and appropriate requirements, the final decision is based on professional judgment about the situation at the site and the requirement as a whole.

In addition, as EPA discussed in the proposal, a requirement must be both "relevant," in that it addresses similar situations or problems, and "appropriate," which focuses on whether the requirement is well-suited to the particular site. Consideration of only the similarity of certain aspects of the requirement and the site situation constitutes only half of the analysis of whether a requirement is relevant and appropriate.

After review of comments it received, EPA has revised the language in § 300.400(g)(2) because it is concerned that it was misleading. Some commenters viewed the analysis required by this section as requiring consideration only of the similarity of the requirement and the problems or situation at the CERCLA site. While non-substantive for the most part, the changes to § 300.400(g)(2) make clearer that a requirement and a site situation must be compared, based on pertinent factors, to determine both the relevance and appropriateness of the requirement. The rule also now uses the term "factors," rather than "criteria," a

change instituted to avoid confusion with the nine criteria for remedy selection in § 300.430.

One commenter suggested that factors be developed for use in evaluating whether a requirement is "appropriate." EPA does not believe this is necessary. Decisions about the appropriateness of a requirement are based on site-specific judgments using the same set of factors already identified. In the abstract it is very difficult to separate out those factors to be considered for relevance and those to be considered for appropriateness. In specific cases it would be possible to say, for example, that a requirement is relevant in terms of the substances but not appropriate in terms of the facility covered.

Several commenters questioned whether certain factors could legitimately be considered in identifying relevant and appropriate requirements. These and other comments on individual factors are discussed below; a brief description of each factor as described in the proposed NCP is given after the name of the factor.

(i): *Purpose of the requirement.* This factor compared the purpose of a requirement to the specific objectives of the CERCLA action. One commenter was concerned that the "objectives for the CERCLA action" could include the implementability of the remedy, its cost, and even the acceptability of the action to the community. This is not what EPA meant by "objectives." Rather, EPA intended that this factor consider the technical, or health and environmental purpose of the requirement compared to what the CERCLA action is trying to achieve. For example, MCLs are promulgated to protect the quality of drinking water; this is similar in purpose to a CERCLA action to restore ground water aquifers to drinkable quality. To avoid confusion, EPA has simplified the factor, which now states, "the purpose of the requirement and the purpose of the CERCLA action."

(ii): *The medium regulated by the requirement.* This factor compared the medium addressed by a requirement to the medium contaminated or affected at a CERCLA site. No comments were received on this factor, and the final rule is essentially unchanged from the proposal.

(iii): *The substances regulated by the requirement.* This factor compared the substances addressed by a requirement to the substances found at a CERCLA site. Several commenters argued that RCRA requirements for hazardous waste should not be potentially relevant and appropriate to wastes "similar" but not identical to a hazardous waste, and

that this criterion should be dropped. EPA disagrees and has discussed this issue in the section of this preamble on RCRA ARARs.

(iv): *The entities or interests affected or protected by the requirement.* This factor compared the entities or interests addressed by a requirement and those affected by a CERCLA site. Two commenters expressed concern about this factor. One commenter was concerned that it could be used to disqualify standards from being relevant and appropriate simply because the requirement regulated entities different from those at a CERCLA site. In contrast, another commenter was concerned that EPA would broadly apply requirements to entities that were never intended to be subject to the requirement. EPA agrees that this factor is confusing. EPA believes that the characteristics intended to be addressed by this factor are adequately covered under other factors, such as purpose and type of facility. Therefore, this factor has been eliminated.

(v): *The actions or activities regulated by the requirement.* This factor compared the actions or activities addressed by a requirement to those undertaken in the remedial action at a CERCLA site. No comments were received on this factor, and the final rule is essentially unchanged from the proposal.

(vi): *Any variances, waivers, or exemptions of the requirement.* This factor considered the availability of variances, waivers, or exemptions from a requirement that might be available for the CERCLA site or action. One commenter asked for clarification on this factor and expressed his view that the CERCLA waiver provisions for ARARs were the only waivers allowable. However, EPA believes that it is reasonable to consider the existence of waivers, exemptions, and variances under other laws because generally there are environmental or technical reasons for such provisions. These provisions are generally incorporated into national regulations because there are specific circumstances where compliance with a requirement may be inappropriate for technical reasons or unnecessary to protect human health and the environment. Again, this factor is only one that should be considered; even if a waiver provision in a requirement matches the circumstances at the CERCLA site, there may be other reasons why the requirement is still relevant and appropriate.

(vii): *The type and size of structure or facility regulated by the requirement.* This factor compared the characteristics

of the structure or facility addressed by a requirement to that affected by or contemplated by the remedial action. One commenter argued that regulations routinely contain cut-offs based on type or size of the structure or facility for administrative or enforcement convenience. EPA agrees that cut-offs based solely on administrative reasons may not be critical in determining whether a requirement is relevant and appropriate. However, EPA believes that it is necessary and appropriate to consider the physical type or size of structure regulated because requirements may be neither relevant nor appropriate to structures or facilities that are dissimilar to those that the requirement was intended to regulate. In many cases, this factor is a very basic one: in identifying requirements relevant to landfills, one would turn to standards for landfills, not for tanks.

(viii): *Consideration of use or potential use of affected resources in the requirement.* This factor compared the resource use envisioned in a requirement to the use or potential use at a CERCLA site. One commenter objected to this factor based primarily on opposition to EPA's proposed ground water policy, which, along with the comments EPA has received on this issue, is discussed in the section on ground-water policy in the preamble discussion of § 300.430. EPA believes it is appropriate to compare the resource use considerations in a requirement with similar considerations at a CERCLA site.

Final rule: 1. The following sentence is added to the proposed definition of "relevant and appropriate" in § 300.5 (see preamble discussion above on "applicable"): "Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be relevant and appropriate."

2. Proposed § 300.400(g)(2) is revised as follows:

(2) If, based upon paragraph (g)(1) of this section, it is determined that a requirement is not applicable to a specific release, the requirement may still be relevant and appropriate to the circumstances of the release. In evaluating relevance and appropriateness, the factors in paragraphs (g)(2)(i) through (viii) shall be examined, where pertinent, to determine whether a requirement addresses problems or situations sufficiently similar to the circumstances of the release or remedial action contemplated, and whether the requirement is well-suited to the site, and therefore is both relevant and appropriate. The pertinence of each of the following factors will depend, in part, on whether a requirement addresses a chemical, location, or action. The following

comparisons shall be made, where pertinent, to determine relevance and appropriateness.

- (i) The purpose of requirement and the purpose of the CERCLA action;
- (ii) The medium regulated or affected by the requirement and the medium contaminated or affected at the CERCLA site;
- (iii) The substances regulated by the requirement and the substances found at the CERCLA site;
- (iv) The actions or activities regulated by the requirement and the remedial action contemplated at the CERCLA site;
- (v) Any variances, waivers, or exemptions of the requirement and their availability for the circumstances at the CERCLA site;
- (vi) The type of place regulated and the type of place affected by the release or CERCLA action;
- (vii) The type and size of structure or facility regulated and the type and size of structure or facility affected by the release or contemplated by the CERCLA action;
- (viii) Any consideration of use or potential use of affected resources in the requirement and the use or potential use of the affected resource at the CERCLA site.

Name: Section 300.400(g)(3). Use of other advisories, criteria or guidance to-be-considered (TBC).

Proposed rule: The preamble to the proposed rule provided that advisories, criteria or guidance to-be-considered (TBC) that do not meet the definition of ARAR may be necessary to determine what is protective or may be useful in developing Superfund remedies (53 FR 51438). The ARARs preamble described three types of TBCs: health effects information with a high degree of credibility, technical information on how to perform or evaluate site investigations or remedial actions, and policy.

For example, proposed § 300.400(g)(3) stated that other advisories, criteria, and guidance to be considered (TBCs) shall be identified, as appropriate, because they may be useful in developing CERCLA remedies. Proposed § 300.415(j)(§ 300.415(i) in the final rule) stated that other federal and state criteria, advisories, and guidance shall, as appropriate, be considered in formulating the removal action. Proposed § 300.430(b) stated that during project scoping the lead agency shall initiate a dialogue with the support agency on potential ARARs and TBCs. Proposed § 300.430(e)(2) provided that other pertinent information may be used to develop remediation goals. Proposed § 300.430(e)(8) provided that the lead agency shall notify the support agency of the alternatives to be analyzed to facilitate the identification of ARARs and TBCs. Proposed § 300.430(f) on selecting a remedy, however, referred to compliance with ARARs only, not TBCs. Proposed subpart F required that the

Final rule: References to TBCs will be changed in the following sections to make it clear that their use is discretionary rather than mandatory: §§ 300.400(g)(3), 300.415(i), 300.430(b)(9), 300.430(d)(3), 300.430(e) (8) and (9), 300.505(d)(2)(iii), 300.515(d) and (d) (1) and (2), and 300.515(h)(2).

Name: Sections 300.400 (g)(4) and (g)(5). ARARs under state laws.

Proposed rule: Section 300.400(g) specified that only promulgated state standards may be considered potential ARARs. A promulgated state standard must be legally enforceable and of general applicability. The term "legally enforceable," according to the preamble to the proposed NCP, means that state laws or standards which are considered potential ARARs must be issued in accordance with state procedural requirements and contain specific enforcement provisions or be otherwise enforceable under state law. The preamble also explained that "of general applicability" means that potential state ARARs must be applicable to all remedial situations described in the requirement, not just CERCLA sites (53 FR 51437-38).

The preamble also discussed a dispute resolution process to be followed if there is disagreement about the identification of ARARs, as well as policies to be followed if a state insists that a remedy attain a requirement not determined to be ARAR (see 53 FR 51437 and 51457).

Response to comments: Commenters on this subject called for EPA to establish a formal procedure to be followed by states to demonstrate that proposed state ARARs are legally enforceable and of generally applicability. Commenters suggested that states be required to provide legal citations from appropriate sections of state laws, as well as appropriate citations to legal authority for issuing compliance orders, obtaining injunctions, or imposing civil or criminal penalties in the event of noncompliance. These citations, according to commenters, would demonstrate that proposed ARARs are legally enforceable.

Commenters suggested that general applicability could be demonstrated by requiring states to identify the chemicals, locations, and cleanup actions to which a proposed ARAR would apply.

The proposed NCP did not prescribe a specific procedure to be used in evaluating state standards as potential ARARs. A formal process for demonstrating that state requirements are promulgated is not required by

CERCLA. EPA believes that the imposition of a formal procedure on states would be a large administrative burden and could impede the cleanup process.

EPA expects, however, that states will substantiate submissions of potential ARARs by providing basic evidence of promulgation, such as a citation to a statute or regulation and, where pertinent, a date of enactment, effective date, or description of scope. Because a citation is the minimum needed to positively identify a requirement, EPA has added regulatory language requiring both lead and support agencies to provide citations when identifying their ARARs.

Section 300.400(g)(4) specifies that only promulgated state standards that are more stringent than federal requirements and are identified by the state in a timely manner may be considered potential ARARs. If a question is raised as to whether a requirement identified by a state conforms to the requirements for being a potential state ARAR, or is challenged on the basis that it does not conform to the definition, the state would have the burden of providing additional evidence to EPA to demonstrate that the requirement is of general applicability, is legally enforceable, and meets the other prerequisites for being a potential ARAR. If EPA does not agree that a state standard identified by a state is an ARAR, EPA will explain the basis for this decision.

Furthermore, the language of CERCLA section 121(d)(2)(A) makes clear, and program expediency necessitates, that the specific requirements that are applicable or relevant and appropriate to a particular site be identified. It is not sufficient to provide a general "laundry" list of statutes and regulations that might be ARARs for a particular site. The state, and EPA if it is the support agency, must instead provide a list of requirements with specific citations to the section of law identified as a potential ARAR, and a brief explanation of why that requirement is considered to be applicable or relevant and appropriate to the site.

Other comments on this section raised objections to EPA's acceptance of general goals as potential ARARs. One commenter questioned whether such general goals were implementable and satisfied the requirements of a promulgated standard, requirement, criteria, or limitation contained in CERCLA section 121(d). Another commenter argued that attempts to interpret compliance with a general goal will lead to confusion and delay. Several commenters requested clarification of

the status of state nondegradation goals and whether such goals qualified as potential ARARs.

In response, it is necessary to examine the nature of a general goal in order to determine whether it may be an ARAR. General goals that merely express legislative intent about desired outcomes or conditions but are non-binding are not ARARs. EPA believes, however, that general goals, such as nondegradation laws, can be potential ARARs if they are promulgated, and therefore legally enforceable, and if they are directive in intent. The more specific regulations that implement a general goal are usually key in identifying what compliance with the goal means.

For example, in the preamble to the proposed NCP, EPA cited the example of a state antidegradation statute that prohibits the degradation of surface water below a level of quality necessary to protect certain uses of the water body (53 FR 51438). If promulgated, such a requirement is clearly directive in nature and intent. State regulations that designate uses of a given water body and state water quality standards that establish maximum in-stream concentrations to protect those uses define how the antidegradation law will be implemented and, if promulgated, also potential ARARs.

Even if a state has not promulgated implementing regulations, a general goal can be an ARAR if it meets the eligibility criteria for state ARARs. However, EPA would have considerable latitude in determining how to comply with the goal in the absence of implementing regulations. EPA may consider guidelines the state has developed related to the provision, as well as state practices in applying the goal, but such guidance or documents would be TBCs, not ARARs.

Final rule: 1. EPA has revised § 300.400(g)(4) as follows:

(4) Only those state standards that are promulgated, are identified by the state in a timely manner, and are more stringent than federal requirements may be applicable or relevant and appropriate. For purposes of identification and notification of promulgated state standards, the term "promulgated" means that the standards are of general applicability and are legally enforceable.

2. Also, language has been added to § 300.400(g)(5) requiring that specific requirements for a particular site be identified as ARARs, and that citations be provided.

Name: Section 300.515(d)(1). Timely identification of state ARARs.

Proposed rule: Section 300.515(d)(1) stated that the lead and support agencies shall identify their respective

case of "applicable" requirements. However, the determination of whether a requirement is relevant and appropriate is not based on its stringency; rather, other criteria are used, as discussed in the section on relevance and appropriateness, and the remedy must comply with the most stringent requirement determined to be ARAR. EPA also believes that, in some situations, the availability of certain requirements that more fully match the circumstances of the site may result in a decision that another requirement is not relevant and appropriate. EPA believes that one such situation is when an MCL or non-zero MCLG and an FWQC for human health are available for the same contaminant when a current or potential source of drinking water is of concern, and there are no impacts to aquatic organisms.

As discussed in this preamble, EPA believes that an MCL or non-zero MCLG is generally the relevant and appropriate requirement for ground water that is a current or potential source of drinking water. EPA also believes that an MCL or non-zero MCLG, promulgated specifically to protect drinking water, generally is the appropriate standard for ground water even if an FWQC for human health is also available for the contaminant, for the following reasons.

CERCLA section 121(d)(2)(B)(i) lists, among other factors, the purpose for which the criteria were developed and the designated or potential use of the water as factors in determining whether FWQC are relevant and appropriate. Since FWQC for human health are promulgated for exposures that include drinking water and consuming fish, on the one hand, and consuming fish only, on the other, it is not directly the purpose of such criteria to provide drinking water standards per se, although levels that protect such a use can be mathematically derived from these two values. Furthermore, such derived values for drinking water will not reflect the contribution of other sources (through an apportionment factor), as MCLs and MCLGs do. Finally, for carcinogens FWQC are recommended at zero, although values corresponding to risks of 10^{-2} , 10^{-6} , and 10^{-7} are also given. For the reasons given in the discussion of MCLs and MCLGs above, the zero value is not considered relevant and appropriate under CERCLA. MCLs, however, represent a level determined to be both protective of human health for drinking water and attainable by treatment.

For the same reasons, EPA believes that MCLs or non-zero MCLGs generally will be the relevant and appropriate

standards for surface water designated as a drinking water supply, unless the state has promulgated water quality standards (WQS) for the water body that reflect the specific conditions of the water body. However, surface water bodies may be designated for uses other than drinking water supply, and therefore an FWQC intended to be protective of such uses, such as the FWQC for consumption of fish or for protection of aquatic life, may very well be relevant and appropriate in such cases. Also, where a contaminant does not have an MCL or MCLG, FWQC adjusted to reflect drinking water use may be used as relevant and appropriate requirements.

Final rule: EPA is including in the final rule at § 300.430(e)(2)(i)(E) language stating that FWQC are to be attained where relevant and appropriate under the circumstances of the release or threatened release.

Name: Section 300.435(b)(2). Compliance with applicable or relevant and appropriate requirements (ARARs) during the remedial action.

Proposed rule: CERCLA section 121 requires that, at the completion of a remedial action, a level or standard of control required by an ARAR will be attained for wastes that remain on-site. However, consistent with the 1985 NCP (§ 300.68(i), § 300.435(b)) of the proposed NCP also required compliance with ARARs during implementation of the action, stating that during the course of the remedial design/remedial action (RD/RA), the lead agency shall be responsible for ensuring that all federal and state ARARs identified for the action are being met, unless a waiver is invoked. Examples of such requirements given in the preamble to the proposed rule included RCRA treatment, storage, and disposal requirements, Clean Air Act national ambient air quality standards, and Clean Water Act effluent discharge limitations (53 FR 51440).

Response to comments: EPA received a number of comments that the NCP should not require compliance with ARARs during the remedial action. Commenters argued that this policy is inconsistent with the statute, which requires compliance with ARARs only, at the completion of the remedial action, and questioned EPA's authority to require compliance with ARARs during remedial design/remedial action.

Several commenters pointed out that CERCLA section 121(d)(1) states that remedial actions must be protective and "must be relevant and appropriate under the circumstances," and argued that this standard should govern how the action itself is carried out. Design and

operation of the remedial action should be based on best professional judgment and undertaken in a manner that is protective. Other commenters suggested requiring compliance only with those ARARs that "can reasonably be achieved," or listing specific types of ARARs that must be met during RD/RA.

Commenters were particularly concerned about problems created by requiring compliance with RCRA requirements and the land disposal restrictions in particular for remedial actions.

EPA disagrees with these commenters. EPA believes that it is appropriate to require that remedial activities comply with the substantive requirements of other laws that apply or are relevant and appropriate to those activities. The reasons for complying with such laws during the conduct of the remediation are basically the same as the reasons for applying ARARs as remediation objectives: the laws help define how the activity can be carried out safely and with proper safeguards to protect human health and the environment. EPA is concerned that, if the narrowest possible interpretation were applied to ARARs compliance, compliance with laws critical to protection of health and the environment would become subject to debate, laws such as those that govern surface water discharges or air emissions, or that set operational standards for incineration of hazardous waste.

Several commenters also stated that chemical-specific ARARs used as remediation goals, such as MCLs as ARARs for ground water remediation, cannot be attained during implementation. EPA wants to clarify that it recognizes that ARARs that are used to determine final remediation levels apply only at the completion of the action.

It is worthwhile to point out, in the context of this policy on complying with ARARs pertaining to the remedial activity itself, that CERCLA provides a waiver from ARARs for interim actions, provided the final action will attain the waived standard. If there is doubt about whether an ARAR represents a final remediation goal or an interim standard, and it cannot be met during the activity, this waiver could be invoked.

Comments were also received on EPA's discussion of compliance with ARARs during remedial investigations in the preamble to the proposed NCP (53 FR 51442-43). In that discussion, EPA stated that on-site handling, treatment or disposal of investigation-derived waste must satisfy ARARs and that the

field investigation teams should use best professional judgment in determining when such wastes contain hazardous substances. One commenter recommends that investigation-derived samples be required to be handled, treated, and disposed in accordance with applicable RCRA requirements.

In response, EPA wishes to clarify the discussion in the preamble to the proposed NCP. CERCLA section 101(23) defines "removal" to include "such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances . . . [including] action taken under section 104(b) of [CERCLA]." EPA has stated, therefore, that studies and investigations undertaken pursuant to CERCLA section 104(b), such as activities conducted during the RI/FS, are considered removal actions (54 FR 13298, March 31, 1989). EPA's policy, explained elsewhere in today's preamble, is that removal actions will comply with ARARs to the extent practicable, considering the exigencies of the circumstances. Thus, the field investigation team should, when handling, treating or disposing of investigation-derived waste on-site, conduct such activities in compliance with ARARs to the extent practicable, considering the exigencies of the situation. Investigation-derived waste that is transported off-site (e.g., for treatability studies or disposal) must comply with applicable requirements of the CERCLA off-site policy (OSWER Directive No. 9634.11 (November 13, 1987)) and § 300.440 when finalized (see 53 FR 48218, November 29, 1988).²⁰ EPA notes that CERCLA section 104(c)(1) provides that the statutory limits on removals do not apply to investigations, monitoring, surveying, testing and other information-gathering performed under CERCLA section 104(b).

Final rule: EPA is promulgating the rule as proposed except for minor editing revisions.

Name: 300.5. Distinction between substantive and administrative requirements.

Proposed rule: The proposed definitions of "applicable" and "relevant and appropriate" stated that they are cleanup standards, standards of control, and other substantive environmental protection requirements, criteria or limitations. The preamble to the proposed rule explained that requirements that do not in and of

themselves define a level or standard of control are considered administrative (53 FR 51443). Administrative requirements include the approval of, or consultation with, administrative bodies, issuance of permits, documentation, and reporting and recordkeeping. Response actions under CERCLA are required to comply with ARARs, which are defined not to include administrative requirements.

Response to comments: Many comments were received on EPA's differentiation between substantive and administrative requirements. Some commenters supported the distinction between substantive and administrative requirements. Other commenters disagreed with EPA's interpretation for various reasons.

Several commenters argued that Superfund actions should not be exempt from consultation requirements. One commenter argued that consultation with a state may be necessary to determine how state ARARs apply to the remedy. A commenter contended that it is virtually impossible to meet substantive requirements without consultation. One commenter asserted that state procedures or methodology necessary to determine permit levels should be considered state ARARs. Another argued that not requiring consultation runs opposite to the spirit of cooperation with states. One commenter suggested narrowing the exemption to allow for consultation through existing Superfund mechanisms such as consent orders, SMOAs, and cooperative agreements.

Commenters also objected to the exemption from reporting and recordkeeping requirements. One contended that EPA had no legal authority for such exemption. Others argued that reporting and recordkeeping are necessary to ensure proper control of hazardous substances that will remain on-site and are also necessary for activities with local impacts: Long-term water diversions and air or surface water releases. Commenters asserted that the lead agency must meet reporting requirements to avoid gaps in a state's environmental data. One commenter noted that there are a number of federal and state programs that require the maintenance of complete databases and that the NCP's approach is inconsistent with such programs. Under these programs, a state needs all discharge information in order to evaluate surface water toxicity impacts in a stream or to establish total maximum daily loads.

The concern was also raised that maintaining reporting and recordkeeping procedures on a site-by-site basis would

undermine a state's standardized reporting requirements, e.g., ground-water monitoring report forms, NPDES forms, etc. Also, unique site approaches to reporting and recordkeeping may result in problems not detected by a state. Further, these commenters stated that they were not aware of Superfund recordkeeping and reporting requirements. One commenter stated that reporting requirements and compliance mechanisms during remedy implementation and O&M periods should be specified through Superfund mechanisms, as appropriate. One commenter contended that if Superfund insists on this distinction, a determination whether a requirement is substantive or administrative must be documented.

EPA has reviewed these comments, but concludes, as stated in the preamble to the proposed NCP (53 FR 51443), that CERCLA response actions should be subject only to substantive, not administrative, requirements. EPA believes that this interpretation is most consistent with the terms of CERCLA and with the goals of the statute. Section 121(d)(2) provides that remedial actions should require "a level or standard of control" which attains ARARs; only substantive standards set levels or standards of control. Moreover, Congress made clear in sections 121(d)(2) and (d)(4) that the "standards" or "requirements" of other laws that are ARARs should be applied to actions conducted on-site, and specifically provided in section 121(e)(1) that federal and state permits would not be required for such on-site response actions. These subsections reflect Congress' judgment that CERCLA actions should not be delayed by time-consuming and duplicative administrative requirements such as permitting, although the remedies should achieve the substantive standards of applicable or relevant and appropriate laws. Indeed, CERCLA has its own comparable procedures for remedy selection and state and community involvement. EPA's approach is wholly consistent with the overall goal of the Superfund program, to achieve expeditious cleanups, and reflects an understanding of the uniqueness of the CERCLA program, which directly impacts more than one medium (and thus overlaps with a number of other regulatory and statutory programs). Accordingly, it would be inappropriate to formally subject CERCLA response actions to the multitude of administrative requirements of other federal and state offices and agencies.

²⁰ The CERCLA off-site policy requires that receiving facilities are in compliance with "applicable laws." Note that many treatability study wastes are exempt from the permitting requirement under RCRA (see 40 CFR 261.4(c) and (f)).

requirements. Rather, given the need to ensure finality of remedy selection in order to achieve expeditious cleanup of sites, and given the length of time often required to design, negotiate, and implement remedial actions, EPA believes that this is the most reasonable interpretation of the statute.

As EPA discusses elsewhere in this preamble, one variation to this policy occurs when a component of the remedy was not identified when the ROD is signed. In that situation, EPA will comply with ARARs in effect when that component is identified (e.g., during remedial design), which could include requirements promulgated both before and after the ROD was signed. EPA notes that newly promulgated or modified requirements may directly apply or be more relevant and appropriate to certain locations, actions or contaminants than existing standards and, thus, may be potential ARARs for future responses.

It is important to note that a policy of freezing ARARs at the time of the ROD signing will not sacrifice protection of human health and the environment, because the remedy will be reviewed for protectiveness every five years, considering new or modified requirements at that point, or more frequently, if there is reason to believe that the remedy is no longer protective of health and environment.

In response to the specific comments received, EPA notes that under this policy, EPA does not intend that a remedy must be modified solely to attain a newly promulgated or modified requirement. Rather, a remedy must be modified if necessary to protect human health and the environment; newly promulgated or modified requirements contribute to that evaluation of protectiveness. For example, a new requirement for a chemical at a site may indicate that the cleanup level selected for the chemical corresponds to a cancer risk of 10^{-5} rather than 10^{-6} , as originally thought. The original remedy would then have to be modified because it would result in exposures outside the acceptable risk range that generally defines what is protective.

This policy that newly promulgated or modified requirements should be considered during protectiveness reviews of the remedy, but should not require a reopening of the ROD during implementation every time a new state or federal standard is promulgated or modified, was discussed in the preamble to the proposed rule (53 FR at 51440) but not in the rule section itself. For the reasons outlined above, EPA believes that this concept is critical to the expeditious and cost-effective

accomplishment of remedies duly selected under CERCLA and the NCP, and thus is appropriate for inclusion in § 300.430(f)(1)(ii)(B) of the final NCP. This will afford both the public and implementing agencies greater clarity as to when and how requirements must be considered during CERCLA responses, and thus will allow the CERCLA program to carry out selected remedies with greater certainty and efficiency. Of course, off-site CERCLA remedial actions are subject to the substantive and procedural requirements of applicable federal, state, and local laws at the time of off-site treatment, storage or disposal.

Final rule: EPA is adding the following language to the rule at § 300.430(f)(1)(ii)(B):

(B) On-site remedial actions selected in a ROD must attain those ARARs that are identified at the time of ROD signature or provide grounds for invoking a waiver under § 300.430(f)(1)(ii)(C)(3).

(1) Requirements that are promulgated or modified after ROD signature must be attained (or waived) only when determined to be applicable or relevant and appropriate and necessary to ensure that the remedy is protective of human health and the environment.

(2) Components of the remedy not described in the ROD must attain (or waive) requirements that are identified as applicable or relevant and appropriate at the time the amendment to the ROD or the explanation of significant differences describing the component is signed.

Name: Applicability of RCRA requirements.

Proposed rule: The preamble to the proposed rule discussed when RCRA subtitle C requirements will be applicable for site cleanups (53 FR 51443). It described the prerequisites for "applicability" at length, which are that:

(1) The waste must be a listed or characteristic RCRA hazardous waste and (2) treatment, storage or disposal occurred after the effective date of the RCRA requirements under consideration (for example, because the activity at the CERCLA site constitutes treatment, storage, or disposal, as defined by RCRA).

The preamble explained how EPA will determine when a waste at a CERCLA site is a listed RCRA hazardous waste. It noted that it is often necessary to know the origin of the waste to determine whether it is a listed waste and that, if such documentation is lacking, the lead agency may assume it is not a listed waste.

The preamble discussed how EPA will determine that a waste is a characteristic hazardous waste under RCRA. It stated that EPA can test to

determine whether a waste exhibits a characteristic or can use best professional judgment to determine whether testing is necessary. "applying knowledge of the hazard characteristic in light of the materials or process used."

The preamble also discussed when a CERCLA action constitutes "land disposal," defined as placement into a land disposal unit under section 3004(k) of RCRA, which triggers several significant requirements, including RCRA land disposal restrictions (LDRs) and closure requirements (when a unit is closed). It equated an area of contamination (AOC), consisting of continuous contamination of varying amounts and types at a CERCLA site, to a single RCRA land disposal unit, and stated that movement within the unit does not constitute placement. It also stated that placement occurs when waste is redeposited after treatment in a separate unit (e.g., incinerator or tank), or when waste is moved from one AOC to another. Placement does not occur when waste is consolidated within an AOC, when it is treated in situ, or when it is left in place.

Response to comments: EPA received many comments on its discussion of when RCRA requirements can be applicable to CERCLA response actions. On the issue of compliance with RCRA in general, most of these commenters argued that RCRA requirements are not intended for site cleanup actions, that such compliance will result in delays and that RCRA requirements are often unnecessary to protect human health and the environment at CERCLA sites. Other commenters argued, however, that EPA is trying to avoid compliance with RCRA requirements. Most of the comments, however, focused on when LDRs are applicable to CERCLA actions and on EPA's discussion of what actions associated with remediation trigger LDRs.

Some commenters opposed EPA's interpretation of "land disposal" or "placement" as too lenient, believing that EPA is trying to avoid compliance with RCRA laws, particularly LDRs. These commenters argued that LDRs should be applicable when hazardous wastes are managed, excavated, or moved in any way. One argued that ARARs waivers are available to address situations when the LDR levels cannot be achieved and should be used as necessary, rather than trying to narrowly define the universe of ARARs to avoid waivers. This commenter was also concerned with EPA's use of the term "unit," calling it an inappropriate concept for Superfund sites because it

will allow the excavation and redeposition of waste within very large areas without ever meeting RCRA design and operating standards and LDR. One commenter asserted that EPA concerns on LDRs stem from an unjustifiable belief that LDR cleanup levels cannot be achieved.

Other commenters believed that the definition of "placement" should provide more flexibility. One asserted that replacement of treated residuals in the proximate area should not constitute placement. The commenter argued that Congress intended to address, preventively or prospectively, the original act of disposal, and that an innocent government or public entity should not be required to assume the entire environmental responsibility of the original disposers. The commenter also argued that establishing that replacement of treated waste triggers LDRs will be a serious disincentive to treating wastes. Some commenters argued that LDRs should not be relevant and appropriate where the CERCLA waste to be disposed on land is merely similar in composition to RCRA banned waste.

Other commenters argued that LDRs are inappropriate for CERCLA remedial actions. They noted an inherent conflict between LDRs, which require treatment to BDAT levels, and the CERCLA process, and claimed that LDRs will supplant CERCLA's "carefully articulated and balanced approach to remedy selection." Commenters asserted that compliance with LDRs will create technical problems because of differences between CERCLA wastes and those evaluated for LDRs. The solutions recommended by these commenters primarily focused on narrowing or eliminating RCRA applicability, but included suggestions for creating treatability groups for CERCLA-type waste and seeking legislative waivers from LDRs, e.g., a waiver from LDRs for Superfund actions at NPL sites.

One commenter believed that the concept of "unit" is not readily transferable to CERCLA sites due to the age and former uses of many of the sites undergoing remediation. Given the ramifications of LDRs, the commenter argued, it may be more reasonable to create a presumption of treating the entire site as one "unit," even if remediation includes a series of operable units.

Some comments were received on EPA's statements on consolidating waste. One stated that consolidation of small amounts of waste across units should not be considered placement, because that will lead to less

environmentally sound and less cost-effective solutions, particularly if LDRs are triggered. Another recommended that EPA should allow consolidation of small volumes of waste anywhere on-site, for purposes of storage or treatment, without triggering otherwise applicable RCRA standards. Another commenter requested clarification that consolidation within a unit included normal earthmoving and grading operations.

1. *Actions constituting land disposal.* EPA disagrees with commenters who considered EPA's interpretation of the definition of "land disposal" under RCRA section 3004(k) to be too narrow. These commenters argued that any movement of waste should be considered "placement" of waste, and thus "land disposal" under RCRA section 3004(k).

The definition of "land disposal" is central to determining whether the RCRA LDRs are applicable to a hazardous waste which is being managed as part of a CERCLA response action, or RCRA closure or corrective action. The term "land disposal" is defined under RCRA section 3004(k) as including, but not limited to, "any placement of such hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave." The terms "landfill," "surface impoundment," and the others, refer to specific types of units defined under RCRA regulations. Thus, Congress generally defined the scope of the LDR program as the placement of hazardous waste in a land disposal unit, as those units are defined under RCRA regulations.

EPA has consistently interpreted the phrase "placement . . . in" one of these land disposal units to mean the placement of hazardous wastes into one of these units, not the movement of waste within a unit. See e.g., 51 FR 40577 (Nov. 7, 1986) and 54 FR 41566-67 (October 10, 1989) (supplemental proposal of possible alternative interpretations of "land disposal"). EPA believes that its interpretation that the "placement . . . in" language refers to a transfer of waste into a unit (rather than simply any movement of waste) is not only consistent with a straightforward reading of section 3004(k), but also with the Congressional purpose behind the LDRs. The central concern of Congress in establishing the LDR program was to reduce or eliminate the practice of disposing of untreated hazardous waste at RCRA hazardous waste facilities. The primary aim of Congress was prospective rather than

directed at already-disposed waste within a land disposal unit. See 51 FR 40577 (Nov. 7, 1986). Moreover, interpreting section 3004(k) to require application of the LDRs to any movement of waste could be difficult to implement and could interfere with necessary operations at an operating RCRA facility. For instance, when hazardous waste is disposed of in a land disposal unit at an operating RCRA facility, there may well be some "movement" of the waste already in the unit. Under the commenters' approach, such movement without pretreatment of the moved waste could be in violation of the LDRs. Thus, under the commenters' interpretation, virtually no operational activities could occur at any RCRA land disposal unit containing hazardous waste without pretreatment of any waste disturbed by the operation; clearly an infeasible approach.

EPA also believes that this interpretation of section 3004(k) is supported by the legislative history for this provision (see 129 Cong. Rec. H8139 (Oct. 6, 1983) (statement of Rep. Breaux)), and by the Congressional choice to define "land disposal" more narrowly for purposes of application of the LDRs than the already-existing term "disposal", which has a much broader meaning under RCRA. Under RCRA section 1004(3), the term "disposal" is very broadly defined and includes any "discharge, deposit, injection, dumping, spilling, leaking, or placing" of waste into or on any land or water. Thus, "disposal" (in a statutory, rather than the regulatory subtitle C meaning of the term) would include virtually any movement of waste, whether within a unit or across a unit boundary. In fact, the RCRA definition of "disposal" has been interpreted by numerous courts to include passive leaking, where no active management is involved (see, e.g., *U.S. v. Waste Industries, Inc.*, 734 F.2d 159 (4th Cir. 1984)). However, Congress did not use the term "disposal" as its trigger for the RCRA land disposal restrictions, but instead specifically defined the new, and more narrow, term "land disposal" in section 3004(k). The broader "disposal" language continues to be applicable to RCRA provisions other than those in subtitle C, such as section 7003. Thus, for the reasons outlined above, EPA believes that the existing interpretation, that movement of waste within a unit does not constitute "land disposal" for purposes of application of the RCRA LDRs, is reasonable.

With respect to the commenter who asked whether normal earthmoving and grading operations within a land disposal unit constitute "placement into

the unit", under EPA's interpretation of RCRA section 3004(k), such activity would not be "placement into the unit" and thus the RCRA LDRs and other subtitle C disposal requirements would not be applicable (nor would the requirement to obtain a permit under RCRA or minimum technology requirements in RCRA section 3004(o) apply).

Given this interpretation of section 3004(k), EPA does not believe that it is necessary to invoke ARAR waivers of LDRs for any movement of waste within a unit, which was the alternative suggested by the commenters. Nor does EPA believe that the widespread use of such waivers would be practical or desirable. 54 FR 41568-69 (October 10, 1989).

EPA also does not fully agree with the commenters who argued that the RCRA concept of "unit" does not apply to CERCLA sites. The commenters who criticized the application of the RCRA "unit" to the CERCLA area of contamination for purposes of section 3004(k) believed it to be either too broad, allowing large areas to escape the LDRs, or too narrow, not allowing entire CERCLA sites to be considered a single "unit". In contrast to hazardous waste management units at a RCRA facility, CERCLA sites often do not involve discrete waste management units, but rather involve land areas on or in which there can be widespread areas of generally dispersed contamination. Thus, determining the boundaries of the RCRA land disposal "unit," for which section 3004(k) would require application of the LDRs at these sites, is not always self-evident.

EPA generally equates the CERCLA area of contamination with a single RCRA land-based unit, usually a landfill. 54 FR 41444 (December 21, 1988). The reason for this is that the RCRA regulatory definition of "landfill" is generally defined to mean a land disposal unit which does not meet the definition of any other land disposal unit, and thus is a general "catchall" regulatory definition for land disposal units. As a result, a RCRA "landfill" could include a non-discrete land area on or in which there is generally dispersed contamination. Thus, EPA believes that it is appropriate generally to consider CERCLA areas of contamination as a single RCRA land-based unit, or "landfill". However, since the definition of "landfill" would not include discrete, widely separated areas of contamination, the RCRA "unit" would not always encompass an entire CERCLA site.

Waste consolidation from different units or AOCs at a CERCLA site are

subject to any applicable RCRA requirements regardless of the volume of the waste or the purpose of the consolidation. Thus, EPA disagrees with those commenters that asserted that small volumes of hazardous waste at a CERCLA site can be consolidated anywhere on-site for storage or treatment purposes without consideration of any applicable RCRA requirements. Such requirements may, however, be subject to ARAR waivers in appropriate circumstances.

The remaining comments received with respect to EPA's interpretation of section 3004(k) discussed the achievability of LDR cleanup levels, questioned the appropriateness of applying the LDRs to remedial actions, and requested more flexibility regarding the LDRs. These comments were the basis for EPA's supplemental notice and proposed reinterpretation of section 3004(k), which is discussed below.

In light of the numerous comments received on the interpretation of "land disposal" in RCRA section 3004(k), as it relates to removal, treatment, and redeposition of hazardous wastes generated by CERCLA and RCRA remedial and other activities, and in view of the important policy decisions that RCRA LDRs pose for the CERCLA and RCRA programs, EPA decided to separately and more fully discuss the issue, the interpretation outlined in the proposed NCP, and possible alternative interpretations of "land disposal". In a supplemental notice to the proposed NCP (54 FR 41566 (Oct. 10, 1989)), EPA outlined several technical, policy, and legal issues concerning LDR applicability to removal, treatment, and redeposition of hazardous wastes, and requested comment on two alternative interpretations of "land disposal". The first alternative would allow the excavation and replacement of previously disposed hazardous wastes in the same unit or area of contamination; since the same wastes would remain in the same unit, this activity would not constitute "land disposal". Under the second alternative, hazardous wastes could be excavated and redeposited either within the original unit or area of contamination, or elsewhere at the site in a new or existing unit. These interpretations would allow greater flexibility in remedial decision-making, in the context of both CERCLA actions and RCRA corrective actions and closures.

On November 6 and 7, 1989, EPA held a forum on contaminated soil and groundwater ("Contaminated Media Forum") to provide an opportunity for interested groups to further address these issues. The Contaminated Media

Forum was attended by representatives from EPA, states, environmental groups, Congress, and the regulated community. A summary of the concerns raised and suggested solutions appears in the public docket for this rulemaking.

2. Selection of LDR treatment standards. Upon further examination, EPA believes that many of the problems discussed in the supplemental notice, and raised by commenters, result from treatment standards developed pursuant to the RCRA LDR program that are generally inappropriate or infeasible when applied to contaminated soil and debris. As discussed in the October 1989 notice, EPA's experience under CERCLA has been that treatment of large quantities of soil and debris containing relatively low levels of contamination using LDR "best demonstrated available technology" (BDAT) is often inappropriate. 54 FR 41567, 41568 (October 10, 1989). EPA noted that:

Experience with the CERCLA program has shown that many sites will have large quantities—in some cases, many thousands of cubic meters—of soils that are contaminated with relatively low concentrations of hazardous wastes. These soils often should be treated, but treatment with the types of technologies that would meet the standard of BDAT may yield little if any environmental benefit over other treatment based remedial options.

54 FR 41566 (October 10, 1989). Examples of these and other situations reflecting EPA's experience concerning the inappropriateness of incinerating contaminated soil and debris are included in the record for this rule. In addition, as discussed below, EPA has experienced problems in achieving the current noncombustion LDRs for contaminated soil and debris. Based on EPA's experience to date and the virtually unanimous comments supporting this conclusion, EPA has determined that, until specific standards for soils and debris are developed, current BDAT standards are generally inappropriate or unachievable for soil and debris from CERCLA response actions and RCRA corrective actions and closures. Instead, EPA presumes that, because contaminated soil and debris is significantly different from the wastes evaluated in establishing the BDAT standards, it cannot be treated in accordance with those standards and thus qualifies for a treatability variance from those standards under 40 CFR 268.44.

Accordingly, persons seeking a treatability variance from LDR treatment standards for contaminated soil and debris do not need to demonstrate on a case-by-case basis

believes that it is unnecessary for petitioners (or the lead Agency in CERCLA response actions) to make site-specific demonstrations that BDAT standards are inappropriate for contaminated soil and debris. The numerous comments and Agency experience supporting a presumption that the BDAT standards are inappropriate or not achievable is clearly warranted at this time because the criteria in 40 CFR 268.44 for treatability variances are generally met for soil and debris. As a result, under EPA's established treatability variance procedures (40 CFR 268.44), variance applications for contaminated soil and debris do not need to demonstrate that the physical and chemical properties differ significantly from wastes analyzed in developing the treatment standard and that, therefore, the waste cannot be treated to specified levels or by specified methods. Petitions need only focus on justifying the proposed alternative levels of performance, using existing interim guidance containing suggested treatment levels for soil and debris (Superfund LDR Guidance #8A, "Obtaining a Soil and Debris Treatability Variance for Remedial Actions", EPA OSWER Directive 9347.3-06FS, July 1989) as a benchmark.

Although the presumption is that BDAT standards are not appropriate for soil and debris, there may be special circumstances where EPA determines that the existing BDAT standards are appropriate for contaminated soils and debris at a particular site, such as where high levels of combustible organics in soil are present. In these circumstances, the Agency would make a determination that treatment to the BDAT standards was appropriate and would require such treatment.

EPA regulations provide that treatability variances may be issued on a site-specific basis. 40 CFR 268.44(h).²²

²² In light of today's determination, the application of this rule requires clarification in two respects. First, although EPA is today establishing a general presumption that BDAT standards are inappropriate or not achievable for treating soil and debris, the Agency does not believe that this presumption triggers the rulemaking variance procedures in 40 CFR 268.44(a). Even with the presumption, treatment levels will be determined on a case-by-case basis, and commenters may submit information contending that the presumption is not applicable in a particular case. Thus, it is EPA's view that the site-specific, non-rulemaking procedures in 40 CFR 268.44(h) are entirely appropriate. See 53 FR 31199-31200 (August 17, 1988).

Second, EPA does not interpret its site specific variance procedures as invariably requiring applicants to demonstrate that they cannot meet applicable treatment levels or methods. The first sentence of 40 CFR 268.44(h) makes it clear that an applicant may make one of two demonstrations to qualify for a variance: he may show either that he

Thus, they may be approved simultaneously with the issuance of a RCRA permit, the approval of a RCRA closure plan, or the selection of a remedy in a CERCLA response action in the ROD. In the case of an on-site CERCLA response action, the procedural requirements of the variance process do not apply. See CERCLA sections 121(e)(1) and 121(d)(2). The variance decision will be made as part of EPA's remedy selection process, during which data justifying alternative treatment levels will be included in the administrative record files, and public participation opportunities and Agency response to comment will be afforded as appropriate under this rule.

In EPA's view, the Agency's determination that the BDAT standards are generally inappropriate for contaminated soil and debris addresses many of the practical concerns raised by commenters in the supplemental notice on the Agency's interpretation of the term "land disposal". For this reason, and because EPA has had insufficient time to review and evaluate the many lengthy and complex issues raised by commenters on the supplemental notice, EPA is deferring any final decision to modify that interpretation. (EPA will respond to comments on the alternatives in the supplemental notice when the Agency makes a final decision on the proposed reinterpretation of land disposal.) Until a final decision is made, the interpretation announced in the preamble to the proposed NCP and discussed in section 1 above will remain in effect.

Final rule: There is no rule language on this issue.

Name: Determination of whether a waste is a hazardous waste.

Proposed rule: The preamble to the proposed rule discussed how to determine whether hazardous waste regulated under RCRA Subtitle C was present at a site (53 FR 51444).

Response to comments: Some commenters raised questions about EPA's discussion about determining whether a waste exhibits a hazardous characteristic. One argued that EPA cannot assume a waste is not a characteristic waste in the absence of testing and should therefore adopt a liberal and inclusive approach to

cannot meet a treatment standard, or that a treatment method (or the method underlying the standard) is inappropriate for his waste. The final sentence of § 268.44(h), identifying the showing an applicant must include in his variance application, on its terms applies only to applications submitted under the first criterion. EPA's presumption, however, applies to soil and debris regardless of which of the two types of variances apply.

determining whether RCRA applies to avoid expensive and time-consuming testing. Another commenter asked for clarification on who was responsible for applying "process knowledge" to determine whether a waste was a hazardous waste in the absence of testing. The commenter asserted that, under RCRA, EPA exercises prosecutorial discretion if a generator, acting in good faith, decides incorrectly that his waste is not hazardous. EPA notes that when it determines that there is a violation there will normally be some kind of enforcement action taken: the level and type of prosecutorial response will depend on a number of factors, for example, the size of the company, the significance of the violation, the intent, etc.

Under RCRA rules, a generator is not required to test, but may use knowledge of the waste and its constituents to judge whether the waste exhibits a characteristic. (See 40 CFR 262.11(c).) EPA believes this should also apply if the lead agency or PRP at a CERCLA site is the "generator." EPA wants to make clear, however, that a decision that a waste is not characteristic in the absence of testing may not be arbitrary, but must be based on site-specific information and data collected on the constituents and their concentrations during investigations of the site. Based on site data, it will be very clear in some cases that a waste cannot be characteristic: for example, if a waste does not contain a constituent regulated as EP toxic, a decision that the waste does not exhibit this characteristic can reliably be made without testing for EP toxicity. EPA does not expect to undertake testing when it can otherwise be determined with reasonable certainty whether or not the waste will exhibit a characteristic.

In response to the second concern, the determination whether a waste is a hazardous waste may be made by EPA, the state, or a PRP, depending on the nature of the action. EPA will take any necessary or appropriate action if decisions about the hazardous nature of the waste are in error or are made without proper basis.

Several commenters discussed the question of whether RCRA requirements can be applicable to RCRA hazardous waste disposed of before the RCRA requirements went into effect in 1980. One commenter argued that they could not be, unless the waste exhibited a characteristic at the time of the CERCLA action. However, as one commenter noted, EPA has consistently maintained in enforcement actions that RCRA requirements apply to any waste

APPENDIX B

**OSWER DIRECTIVE 9347.3-05 FS
SUPERFUND LDR GUIDE #5**



Superfund LDR Guide #5

Determining When Land Disposal Restrictions (LDRs) Are Applicable to CERCLA Response Actions

CERCLA Section 121(d)(2) specifies that on-site Superfund remedial actions shall attain "other Federal standards, requirements, criteria, limitations, or more stringent State requirements that are determined to be legally applicable or relevant and appropriate (ARAR) to the specified circumstances at the site." In addition, the National Contingency Plan (NCP) requires that on-site removal actions attain ARARs to the extent practicable. Off-site removal and remedial actions must comply with legally applicable requirements. This guide outlines the process used to determine whether the Resource Conservation and Recovery Act (RCRA) land disposal restrictions (LDRs) established under the Hazardous and Solid Waste Amendments (HSWA) are "applicable" to a CERCLA response action. More detailed guidance on Superfund compliance with the LDRs is being prepared by the Office of Solid Waste and Emergency Response (OSWER).

For the LDRs to be applicable to a CERCLA response, the action must constitute placement of a restricted RCRA hazardous waste. Therefore, site managers (OSCs, RPMs) must answer three separate questions to determine if the LDRs are applicable:

- (1) Does the response action constitute placement?
- (2) Is the CERCLA substance being placed also a RCRA hazardous waste? and if so
- (3) Is the RCRA waste restricted under the LDRs?

Site managers also must determine if the CERCLA substances are California list wastes, which are a distinct category of RCRA hazardous wastes restricted under the LDRs (see Superfund LDR Guide #2).

(1) DOES THE RESPONSE CONSTITUTE PLACEMENT?

The LDRs place specific restrictions (e.g., treatment of waste to concentration levels) on RCRA hazardous wastes prior to their placement in land disposal units. Therefore, a key determination is whether the response action will constitute placement of wastes into a land disposal unit. As defined by RCRA, land disposal units include landfills, surface impoundments, waste piles, injection wells, land treatment facilities, salt dome formations, underground mines or caves, and concrete bunkers or vaults. If a CERCLA response includes disposal of wastes in any of these types of off-site land disposal units, placement will occur. However, uncontrolled hazardous waste sites often have widespread and dispersed contamination, making the

concept of a RCRA unit less useful for actions involving on-site disposal of wastes. Therefore, to assist in defining when "placement" does and does not occur for CERCLA actions involving on-site disposal of wastes, EPA uses the concept of "areas of contamination" (AOCs), which may be viewed as equivalent to RCRA units, for the purposes of LDR applicability determinations.

An AOC is delineated by the areal extent (or boundary) of contiguous contamination. Such contamination must be continuous, but may contain varying types and concentrations of hazardous substances. Depending on site characteristics, one or more AOCs may be delineated. Highlight 1 provides some examples of AOCs.

Highlight 1: EXAMPLES OF AREAS OF CONTAMINATION (AOCs)

- A waste source (e.g., waste pit, landfill, waste pile) and the surrounding contaminated soil.
- A waste source, and the sediments in a stream contaminated by the source, where the contamination is continuous from the source to the sediments.*
- Several lagoons separated only by dikes, where the dikes are contaminated and the lagoons share a common liner.

* The AOC does not include any contaminated surface or ground water that may be associated with the land-used waste source.

For on-site disposal, placement occurs when wastes are moved from one AOC (or unit) into another AOC (or unit). Placement does not occur when wastes are left in place, or moved within a single AOC. Highlight 2 provides scenarios of when placement does and does not occur, as defined in the proposed NCP. The Agency is currently reevaluating the definition of placement prior to the promulgation of the final NCP, and therefore, these scenarios are subject to change.

Highlight 2: PLACEMENT

Placement does occur when wastes are:

- Consolidated from different AOCs into a single AOC;
- Moved outside of an AOC (for treatment or storage, for example) and returned to the same or a different AOC; or
- Excavated from an AOC, placed in a separate unit, such as an incinerator or tank that is within the AOC, and redeposited into the same AOC.

Placement does not occur when wastes are:

- Treated in situ;
- Capped in place;
- Consolidated within the AOC; or
- Processed within the AOC (but not in a separate unit, such as a tank) to improve its structural stability (e.g., for capping or to support heavy machinery).

In summary, if placement on-site or off-site does not occur, the LDRs are not applicable to the Superfund action.

(2) IS THE CERCLA SUBSTANCE A RCRA HAZARDOUS WASTE?

Because a CERCLA response must constitute placement of a restricted RCRA hazardous waste for the LDRs to be applicable, site managers must evaluate whether the contaminants at the CERCLA site are RCRA hazardous wastes. Highlight 3 briefly describes

the two types of RCRA hazardous wastes --listed and characteristic wastes.

Highlight 3: RCRA HAZARDOUS WASTES

A RCRA solid waste* is hazardous if it is listed or exhibits a hazardous characteristic.

Listed RCRA Hazardous Wastes

Any waste listed in Subpart D of 40 CFR 261, including:

- F waste codes (Part 261.31)
- K waste codes (Part 261.32)
- P waste codes (Part 261.33(e))
- U waste codes (Part 261.33(f))

Characteristic RCRA Hazardous Wastes

Any waste exhibiting one of the following characteristics, as defined in 40 CFR 261:

- Ignitability
- Corrosivity
- Reactivity
- Extraction Procedure (EP) Toxicity

* A solid waste is any material that is discarded or disposed of (i.e., abandoned, recycled in certain ways, or considered inherently waste-like). The waste may be solid, semi-solid, liquid, or a contained gaseous material. Exclusions from the definition (e.g., domestic sewage sludge) appear in 40 CFR 261.4(a). Exemptions (e.g., household wastes) are found in 40 CFR 261.4(b).

Site managers are not required to presume that a CERCLA hazardous substance is a RCRA hazardous waste unless there is affirmative evidence to support such a finding. Site managers, therefore, should use "reasonable efforts" to determine whether a substance is a RCRA listed or characteristic waste. (Current data collection efforts during CERCLA removal and

remedial site investigations should be sufficient for this purpose.) For listed hazardous wastes, if manifests or labels are not available, this evaluation likely will require fairly specific information about the waste (e.g., source, prior use, process type) that is "reasonably ascertainable" within the scope of a Superfund investigation. Such information may be obtained from facility business records or from an examination of the processes used at the facility. For characteristic wastes, site managers may rely on the results of the tests described in 40 CFR 261.21 - 261.24 for each characteristic or on knowledge of the properties of the substance. Site managers should work with Regional RCRA staff, Regional Counsel, State RCRA staff, and Superfund enforcement personnel, as appropriate, in making these determinations.

In addition to understanding the two categories of RCRA hazardous wastes, site managers will also need to understand the derived-from rule, the mixture rule, and the contained-in interpretation to identify correctly whether a CERCLA substance is a RCRA hazardous waste. These three principles, as well as an introduction to the RCRA delisting process, are described below.

Derived-from Rule (40 CFR 261.3(c)(2))

The derived-from rule states that any solid waste derived from the treatment, storage, or disposal of a listed RCRA hazardous waste is itself a listed hazardous waste (regardless of the concentration of hazardous constituents). For example, ash and scrubber water from the incineration of a listed waste are hazardous wastes on the basis of the derived-from rule. Solid wastes derived from a characteristic hazardous waste are hazardous wastes only if they exhibit a characteristic.

Mixture Rule (40 CFR 261.3(a)(2))

Under the mixture rule, when any solid waste and a listed hazardous waste are mixed, the entire mixture is a listed hazardous waste. For example, if a generator mixes a drum of listed F006 electroplating waste with a non-hazardous wastewater (wastewaters are solid wastes - see Highlight 3), the entire mixture of the F006 and wastewater is a listed hazardous waste.

Mixtures of solid wastes and characteristic hazardous wastes are hazardous only if the mixture exhibits a characteristic.

Contained-in Interpretation (OSW Memorandum dated November 13, 1986)

The contained-in interpretation states that any mixture of a non-solid waste and a RCRA listed hazardous waste must be managed as a hazardous waste as long as the material contains (i.e., is above health-based levels) the listed hazardous waste. For example, if soil or ground water (i.e., both non-solid wastes) contain an F001 spent solvent, that soil or ground water must be managed as a RCRA hazardous waste, as long as it "contains" the F001 spent solvent.

Delisting (40 CFR 260.20 and .22)

To be exempted from the RCRA hazardous waste "system," a listed hazardous waste, a mixture of a listed and solid waste, or a derived-from waste must be delisted (according to 40 CFR 260.20 and .22). Characteristic hazardous wastes never need to be delisted, but can be treated to no longer exhibit the characteristic. A contained-in waste also does not have to be delisted; it only has to "no longer contain" the hazardous waste.

If site managers determine that the hazardous substance(s) at the site is a RCRA hazardous waste(s), they should also determine whether that RCRA waste is a California list waste. California list wastes are a distinct category of RCRA wastes restricted under the LDRs (see Superfund LDR Guide #2).

(3) IS THE RCRA WASTE RESTRICTED UNDER THE LDRs?

If a site manager determines that a CERCLA waste is a RCRA hazardous waste, this waste also must be restricted for the LDRs to be an applicable requirement. A RCRA hazardous waste becomes a restricted waste on its HSWA statutory deadline or sooner if the Agency promulgates a standard before the deadline. Because the LDRs are being phased in over a period of time (see Highlight 4), site managers may need to determine what type of restriction is in

Highlight 4: LDR STATUTORY DEADLINES

Waste	Statutory Deadline
Spent Solvent and Dioxin-Containing Wastes	November 8, 1986
California List Wastes	July 8, 1987
First Third Wastes	August 8, 1988
Spent Solvent, Dioxin-Containing, and California List Soil and Debris From CERCLA/RCRA Corrective Actions	November 8, 1988
Second Third Wastes	June 8, 1989
Third Third Wastes	May 8, 1990
Newly Identified Wastes	Within 6 months of identification as a hazardous waste

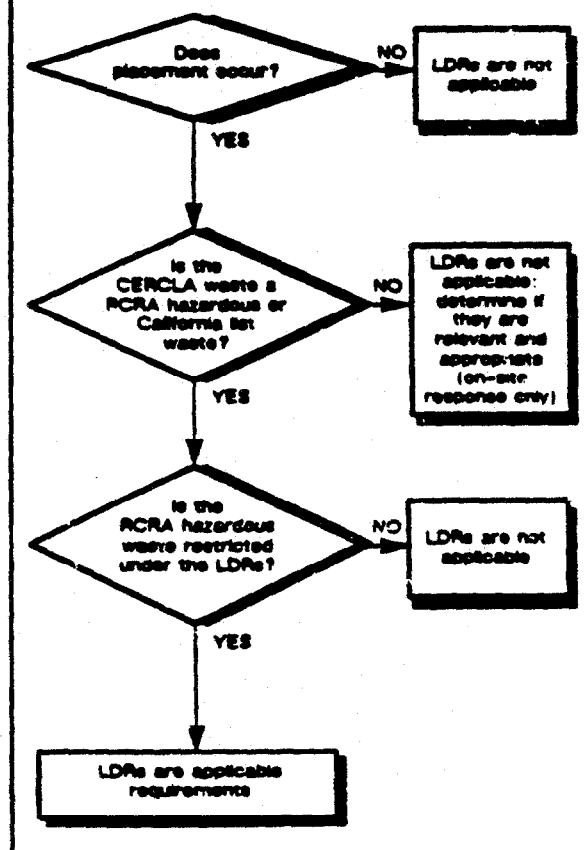
effect at the time placement is to occur. For example, if the RCRA hazardous wastes at a site are currently under a national capacity extension when the CERCLA decision document is signed, site managers should evaluate whether the response action will be completed before the extension expires. If these wastes are disposed of in surface impoundments or landfills prior to the expiration of the extension, the receiving unit would have to meet minimum technology requirements, but the wastes would not have to be treated to meet the LDR treatment standards.

APPLICABILITY DETERMINATIONS

If the site manager determines that the LDRs are applicable to the CERCLA response based on the previous three questions, the site manager must: (1)

comply with the LDR restriction in effect, (2) comply with the LDRs by choosing one of the LDR compliance options (e.g., Treatability Variance, No Migration Petition), or (3) invoke an ARAR waiver (available only for on-site actions). If the LDRs are determined not to be applicable, then, for on-site actions only, the site manager should determine if the LDRs are relevant and appropriate. The process for determining whether the LDRs are applicable to a CERCLA action is summarized in Highlight 5.

Highlight 5 - DETERMINING WHEN LDRS ARE APPLICABLE REQUIREMENTS



APPENDIX C

**OSWER DIRECTIVE 9330.2-04
DISCHARGE OF WASTEWATER FROM CERCLA SITES INTO POTWs**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 15 1986

OSWER Directive 9330.2-4

MEMORANDUM

SUBJECT: Discharge of Wastewater from CERCLA Sites into POTWS

FROM: Henry L. Longest II, Director
Office of Emergency and Remedial Response

Rebecca Harner, Director
Office of Water Enforcement and Permits

Gene A. Lucero, Director
Office of Waste Programs Enforcement

TO: Waste Management Division Directors
Regions I - X

Water Management Division Directors
Regions I - X

A number of emergency removals and remedial cleanup actions under CERCLA will involve consideration of publicly owned treatment works (POTWs) for discharge of wastewater. The current off-site policy (issued on May 6, 1985) does not address the set of concerns and issues unique to POTWs that must be evaluated during the Remedial Investigation and Feasibility Study (RI/FS) for discharge of CERCLA wastewater to POTWs.

Recently, we have had meetings with representatives of the Association of Metropolitan Sewerage Authorities (AMSA) to discuss technical and policy concerns related to the POTW/CERCLA issue. This memorandum is to highlight some of the major points under consideration which were shared with AMSA at their recent Winter Technical Conference. The Agency intends to develop policy on the use and selection of POTWs for CERCLA wastewater. Your comments are sought on the proposed criteria set forth herein. These criteria may be useful in evaluation of POTWs for response actions (fund financed or responsible party financed) to be taken in the interim.

Our position is that no CERCLA discharges to a POTW should occur unless handled in a manner demonstrated to be protective of human health and the environment. Full compliance with all applicable requirements of the Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), and any other relevant or appropriate environmental statutes will be necessary.

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The national pretreatment program, under the Clean Water Act, requires an analysis to determine whether the discharge of an industrial user of a POTW may pass through the POTW to cause receiving water quality problems or may interfere with POTW operations (including sludge disposal). If the analysis suggests that limits on the industrial user's discharge are needed to prevent pass through or interference, local limits or other safeguards, as necessary, must be established by the POTW and/or the NPDES permitting authority. The national pretreatment program requirements apply to the introduction of all non-domestic wastewater into any POTW, and include, among other things, the following elements:

- o Prohibited discharge standards - prohibit the introduction of pollutants to the POTW which are ignitable, corrosive, excessively high in temperature, or which may cause interference or pass through at the POTW.
- o Categorical discharge standards - include specific pretreatment standards which are established by EPA for the purpose of regulating industrial discharges in specific industrial categories.
- o Local limits - where no categorical standards have been promulgated or where more stringent controls are necessary.

POTWs under consideration as potential receptors of CERCLA wastewaters may include those POTWs either with or without an approved pretreatment program. POTWs with an approved pretreatment program are required to have the mechanisms necessary to ensure compliance by industrial users with applicable pretreatment standards and requirements.* POTWs without an approved pretreatment program must be evaluated to determine whether sufficient mechanisms exist to allow the POTW to meet the requirements of the national pretreatment program in accepting CERCLA wastewaters. As noted above, pass through and interference are always prohibited, regardless of whether a POTW has an approved pretreatment program. POTWs without an approved pretreatment program must therefore have mechanisms which are adequate to apply the requirements of the national pretreatment program to specific situations.

*POTWs with approved pretreatment programs must, among other things, establish procedures to notify industrial users (IUs) of applicable pretreatment standards and requirements, receive and analyze self-monitoring reports from IUs, sample and analyze industrial effluents, investigate noncompliance, and comply with public participation requirements.

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Determination of a POTW's ability to accept CERCLA wastewater as an alternative to on-site treatment and direct discharge to receiving waters must be made during the Remedial Investigation/Feasibility Study (RI/FS) process. During the remedial alternatives analysis, the appropriateness of using a POTW must be carefully evaluated. Water Division officials and their state counterparts should participate in the evaluation of any remedial alternatives recommending the use of a POTW, and should concur on the selection of the POTW.

If an alternative considers the discharge of wastewater from a CERCLA site into a POTW, the following points should be evaluated in the RI/FS prior to the selection of the remedy for the site:

- o The quantity and quality of the CERCLA wastewater and its compatibility with the POTW (The constituents in the CERCLA wastewater must not cause pass through or interference, including unacceptable sludge contamination or a hazard to employees at the POTW; in some cases, control equipment at the CERCLA site may be appropriate in order to pretreat the CERCLA discharge prior to introduction to the POTW).
- o The ability (i.e., legal authority, enforceable mechanisms, etc.) of the POTW to ensure compliance with applicable pretreatment standards and requirements, including monitoring and reporting requirements.
- o The POTW's record of compliance with its NPDES permit and pretreatment program requirements to determine if the POTW is a suitable disposal site for the CERCLA wastewater.
- o The potential for volatilization of the wastewater at the CERCLA site and POTW and its impact upon air quality.
- o The potential for groundwater contamination from transport of CERCLA wastewater or impoundment at the POTW, and the need for groundwater monitoring.
- o The potential effect of the CERCLA wastewaters upon the POTW's discharge as evaluated by maintenance of water quality standards in the POTW's receiving waters, including the narrative standard of "no toxics in toxic amounts".

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- o The POTW's knowledge of and compliance with any applicable RCRA requirements or requirements of other environmental statutes (RCRA permit-by-rule requirements may be triggered if the POTW receives CERCLA wastewaters that are classified as "hazardous wastes" without prior mixing with domestic sewage, i.e., direct delivery to the POTW by truck, rail, or dedicated pipe; CERCLA wastewaters are not all necessarily considered hazardous wastes; case by case determinations have to be made).
- o The various costs of managing CERCLA wastewater, including all risks, liabilities, permit fees, etc. (It may be appropriate to reflect these costs in the POTW's connection fees and user charge system).

Based upon consideration of the above elements, the discharge of CERCLA wastewater to a POTW should be deemed inappropriate if the evaluation indicates that:

- o The constituents in the CERCLA discharge are not compatible with the POTW and will cause pass through, interference, toxic pollutants in toxic amounts in the POTW's receiving waters, unacceptable sludge contamination, or a hazard to employees of the POTW.
- o The impact of the transport mechanism and/or discharging of CERCLA wastewater into a POTW would result in unacceptable impacts upon any environmental media.
- o The POTW is determined to be an unacceptable receptor of CERCLA wastewaters based upon a review of the POTW's compliance history.
- o The use of the POTW is not cost-effective.

If consideration of the various elements indicates that the discharge of CERCLA wastewater to a POTW is deemed appropriate:

- o There should be early public involvement, including contact with POTW officials and users, in accordance with the CERCLA community relations plan and public participation requirements.
- o The NPDES permit and fact sheet may need to be modified to reflect the conditions of acceptance of CERCLA wastewaters; permit modification may be necessitated by the need to incorporate specific pretreatment requirements, local limits, monitoring requirements and/or limitations on additional pollutants of concern in the POTW's discharge or other factors.

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Policy to be developed in the future will apply to all removal, remedial, and enforcement actions taken pursuant to CERCLA and Section 7003 of RCRA. We would appreciate your feedback on this memorandum and any experience in the use of POTW; for CERCLA removal or remedial actions that you have to offer.

If you have any comments or questions on this issue, please submit written comments to the workgroup co-chairs: Shirley Ross (FTS-382-5755) from the Office of Emergency and Remedial Response, or Victoria Price (FTS-382-5681) from the Office of Water.

cc: Ed Johnson
Russ Wyer
Tim Fields
Steve Lingle

APPENDIX D
TCLP CONSTITUENTS

TOXICITY CHARACTERISTIC CONSTITUENTS AND REGULATORY LEVELS

Constituent	Regulatory level (mg/L)
Arsenic	5.0
Barium	100.0
Benzene	0.5
Cadmium	1.0
Carbon tetrachloride	0.5
Chlorodane	0.03
Chlorobenzene	100.0
Chloroform	6.0
Chromium	5.0
o-Cresol	200.0
m-Cresol	200.0
p-Cresol	200.0
2,4-D	10.0
1,4-Dichlorobenzene	7.5
1,2-Dichloroethane	0.5
1,1-Dichloroethylene	0.7
2,4-Dinitrotoluene	0.13
Endrin	0.02
Heptachlor (and its hydroxide)	0.008
Hexachlorobenzene	0.13
Hexachloro-1,3-butadiene	0.5
Hexachlorethane	3.0
Lead	5.0
Lindane	0.4
Mercury	0.2
Methoxychlor	10.0
Methyl ethyl ketone	200.0
Nitrobenzene	2.0

TOXICITY CHARACTERISTIC CONSTITUENTS AND REGULATORY LEVELS

Constituent	Regulatory level (mg/L)
Pentachlorophenol	100.0
Pyridine	5.0
Selenium	1.0
Silver	5.0
Tetrachloroethylene	0.7
Toxaphene	0.5
Trichlorethylene	0.5
2,4,5-Trichlorophenol	400.0
2,4,6-Trichlorophenol	2.0
2,4,5-TP (Silvex)	1.0
Vinyl chloride	2.0

APPENDIX E
GLOSSARY OF TERMS

GLOSSARY OF TERMS

AOC	-	Area of Contamination
ARARs	-	Applicable or Relevant and Appropriate Requirements
BDAT	-	Best Demonstrated Available Technology
BOA	-	Basic Ordering Agreement
CAA	-	Clean Air Act
CERCLA	-	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	-	Contract Laboratory Program
CWA	-	Clean Water Act
DE	-	Disposable Equipment
FIT	-	Field Investigation Team
HSWA	-	Hazardous and Solid Waste Amendments
IDW	-	Investigation - Derived Wastes
LDRs	-	Land Disposal Restrictions
NCP	-	National Contingency Plan
PCB	-	Polychlorinated Biphenyls
PPE	-	Personal Protective Equipment
POTW	-	Publicly Owned Treatment Works
PRPs	-	Potentially Responsible Parties
RCRA	-	Resource Conservation and Recovery Act
RI/FS	-	Remedial Investigation/Feasibility Study
RPO	-	Regional Project Officer
SDWA	-	Safe Drinking Water Act
SI	-	Site Inspection
SM	-	Site Inspection Manager
SWDA	-	Solid Waste Disposal Act
TSU	-	Treatment, Storage, and Disposal
TCLP	-	Toxicity Characteristic Leaching Procedure
TSCA	-	Toxic Substances Control Act

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